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The Performance of Prekindergarten Children on Representational Tasks Across Levels of Displacement.

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**THE PERFORMANCE OF PREKINDERGARTEN CHILDREN
ON REPRESENTATIONAL TASKS
ACROSS LEVELS OF DISPLACEMENT**

A Dissertation

**Submitted to the graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy**

in

The Department of Curriculum and Instruction

**by
Emily Flake Smith
B.S., Louisiana State University, 1973
M.A., Louisiana State University, 1994
Ed.S., Louisiana State University, 1997
December 1999**

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ABSTRACT

Nelson's (1996) experiential theory and the Situational-Discourse-Semantic (SDS) model of Norris and Hoffman (1993, 1997, in press) guided this investigation. The SDS model was used to establish predictions regarding the representational difficulty of each of the task conditions. Subjects were 32 four-year-old children enrolled in four prekindergarten programs located within a small city in southern Louisiana and represented both lower and middle SES populations. The tasks required subjects to represent knowledge of the bedtime routine, ranging from personal enactments with props through generation of stories and event scripts for hypothetical situations. Performances were analyzed for content in terms of event structure or story structure. The linguistic forms of the performances were analyzed for MLU, completeness, and complexity. Subjects were predicted to perform higher on lower level tasks. The view of representational abilities as existing along a continuum of displacement levels as proposed by the SDS model was largely supported by the analysis of content scores. Partial support resulted for the prediction that children would produce utterances with more completeness and complexity for tasks rated as lower levels of the SDS model.

Experiential theory and the SDS model propose that the ability to represent information displaced from the self and the present time and space is mediated by language experience with caretakers in direct and indirect literacy experiences. Subjects having higher levels of home literacy experience, as measured by a caretaker questionnaire, were predicted to perform higher on higher level tasks. Subgroups were formed according to caretaker reports for higher and lower amounts of home literacy experience. Performance scores for the two groups were compared. Results largely supported this prediction as the higher literacy experience group scored higher on all tasks with significant differences for 5 of the 7 tasks on content and for only the highest level task on form. Content and form scores for all subjects on the 7 representational tasks were also correlated with the home literacy experience scores. Correlations for individual performances and home literacy experience generally supported predictions made by the SDS model as high correlations were found for the highest level tasks.

INTRODUCTION

The representational abilities of children are manifested in their play, drawings, conversations, or experiments. This ability to cognitively represent knowledge emerges gradually throughout childhood. Piaget proposed that representation emerged in stages, with qualitatively different types of representational thought emanating with each new cognitive equilibration (Piaget, 1936/1952, 1937/1954). But other researchers challenged the concept of stages, viewing representational abilities to be far more situationally governed and based on experience (Bruner, 1964, 1966; Borke, 1975; Anderson & Cuneo, 1978; Peterson & McCabe, 1985, Baillargeon, 1987, Baillargeon & DeVos, 1991). In this view, greater representational ability would be demonstrated in more situationally familiar contexts. Consequently, contexts such as daily routines would elicit better representational abilities than unfamiliar events. Similarly, the presence of situational artifacts (i.e., objects or scenes associated with the event) would elicit better representational abilities than unsupported contexts of use (Masterson & Kamhi, 1991; Link, 1995; Scott, 1997). This study examined the representational abilities of preschool-age children under seven different representational conditions. These conditions ranged from highly familiar and contextualized to unfamiliar or hypothetical and unsupported by context (i.e., decontextualized). The levels of the Situational-Discourse-Semantic (SDS) model (Norris & Hoffman, 1993, 1997, in press) were used to establish predictions regarding the relative representational difficulty of each of the conditions.

Each representational condition was assessed for both nonverbal and verbal abilities. While Piaget focused on nonverbal representational abilities, and viewed the advent of *logical operations* as allowing the child to represent linguistically, Vygotsky (1934/1997) proposed that *social speech* was transformed to *inner speech* so that concepts could then be linguistically represented. More current theories such as the experiential model proposed by Nelson (1996) and Norris and Hoffman's (1993, 1997, in press) SDS model view language as a critical aspect of the socio-cognitive learning process. That is, what is learned is greatly determined by that which is culturally exchanged and organized within the social environment. Language, a critical tool of this process, is both constructed through socio-cognitive processes and is the individual's primary means of exchanging and organizing knowledge. Therefore, the language used to represent knowledge under the seven representational conditions was analyzed for the content expressed and the form.

Finally, performance on each of the seven tasks was correlated with the level of literate language (as measured by direct and indirect experiences with literacy) in the home. It was hypothesized that children with greater literacy experiences would be exposed to a form of culturally and linguistically exchanged and organized knowledge that would be positively correlated with the performance on the seven representational tasks. It was also predicted that the greater the representational demands (as predicted by the SDS model), the greater the effect of literate language experiences on task performance.

This chapter will establish a theoretical frame supporting the predicted differences in representational conditions. First, a discussion of developmental changes in task performance resulting from changes in representational thought is presented. This is followed by summaries for important elements of Nelson's (1996) experiential theory that provide the basis for understanding how human representational ability emerges. Next, Norris and Hoffman's (1993, 1997, in press) Situational-Discourse-Semantic (SDS) model is described to provide a schematic for defining and making predictions about differences between representational conditions. A rationale for embedding this study within these theoretical models concludes the chapter.

Development of Representational Thought

Representational thought changes over time and these changes result from the increasing ability to mentally form concepts for events and objects, and to mentally manipulate these concepts or to perform mental operations. As development proceeds, individual actions are controlled more and more by what is internally represented or conceptually stored than by what is perceived or sensed in the external environment. The work of both Piaget and Vygotsky provide relevant background for beginning a discussion of representational thought and is briefly reviewed here before discussing the more recent theoretical perspectives that provide the basis for the present study.

Piaget and Decentration

Beginning with Piaget, we are introduced to the notion of decentering or the developing ability to mentally represent objects and events that lie beyond

those that are directly affecting the body in the present time and space. The process of decentering takes place across a series of stages and this process changes the structure of thought. While in the *sensorimotor* stage, the infant is not able to perform mental operations on external stimuli. During this stage the child is constructing the sensory-motor schemes that establish the foundation for representational thought. The child in the *pre-operational* stage begins to form mental schemes for manipulating objects, but these schemes can only be applied to objects actually present in the environment. At this stage the schemes can only be enacted but not yet mentally reversed, and so while the child applies logic, it is based on perception (i.e., three coins spaced apart in one row are more than 3 coins closely positioned in another row). Thought remains externally controlled.

As the child enters the *concrete operational* stage, mental manipulation of experienced objects and events becomes possible. Now the child can coordinate the actual perceptual state of objects with mental representations of earlier states. This makes thought processes such as reversibility and other conservation schemes (i.e., the number of coins in each row are equal and the same number remains in each row whether the coins are spaced apart or close together) as well as association (i.e., the coins can be grouped as money or as round objects) possible.

The capacity for abstract manipulation of ideas becomes available once the child enters the *formal operational* stage. At this stage operations can be performed on mental symbols to create new schemes, independent of external

stimuli. With each new type of operational logic, thought is further freed from sensory-motor experience and increasingly displaced from perceptions. Internal schemes become more salient than external objects and events, as logic overrides perception.

Vygotsky and Language

Vygotsky (1933/1978, 1934/1997) also viewed the child as first relating only to the aspects of the environment with innate or basic biological capacities for attention, perception, and memory. These basic capacities motivated or caused learning to occur. He refers to this period as the *prespeech* phase in the development of thought. However, Vygotsky believed that the child's social experience in interlinguistic activity (rather than Piaget's logical operations) was crucial for later conceptual or representational development. For Vygotsky, the child is drawn into spontaneously using language to influence the behavior of others (social speech) during the *preintellectual* phase in the development of speech. Through this spontaneous yet social use of language, the child is bootstrapped into being able to utilize language as a medium for mentally representing the concepts of the culture (inner speech). As cultural concepts are continually coming to be mentally represented with linguistic signs, the child transitions from the spontaneous or pragmatic use of words and objects in imitation of others to the self-conscious generation of word combinations. This development allows the child to represent and communicate specific meanings that can gradually become more and more displaced from the present time and space and from self-experience.

Language becomes not only an interpersonal communicative tool but also an intrapersonal tool for representational thought. With this increasing ability to represent, to conceptualize, or to think, the child comes to individually organize the world and is able to increasingly respond to events and objects in ways that are socio-culturally intelligible. This is because the language first provided by others to direct attention and behavior or to instruct has also provided for the development of concepts or representational thought. In order to “grow into the intellectual life of those around them” (Vygotsky, 1933/1978, p.88) or to develop mature levels of representational thought, children must be socially and verbally instructed in the existing knowledge of the culture.

Piaget versus Vygotsky

Whereas both Piaget and Vygotsky would agree that the newborn does not possess representational thought, they differ as to how development proceeds. For Piaget, representations for later abstract logical operations were more dependent upon the formation of object schemes, which were viewed as independent of language. In contrast, Vygotsky saw the semiotic mediation provided by others as most important so that developmental change rested primarily on the linguistic scaffold provided by caretakers. Piaget saw egocentric speech as non-communicative but as leading to social speech. Vygotsky viewed development as moving in the opposite direction. For him, social speech leads to egocentric speech and egocentric speech becomes internalized or inner speech.

However, neither Piaget nor Vygotsky's theories explain how the child actually uses prelinguistic representations, acquired during infancy, in later developing linguistic representational ability. Piaget only explained that it was the advent of logical operations, an invariant maturational process, which allowed for linguistic representation. This explanation only leads to the question of how is it that logical operations develop. Vygotsky suggested that social speech led to inner speech, but this presents the question of how is it that social speech develops. Nelson's (1996) experiential theory and the SDS model of Norris and Hoffman (1993, 1997, in press) integrate these two seminal works as well as fill in the obvious gaps that exist in both.

Nelson's Experiential Theory

Katherine Nelson (1996), a developmental psychologist interested in language in cognitive development, recognizes the complementarity of Piaget's and Vygotsky's theories. She successfully combines and extends these theoretical perspectives and proposes *collaborative construction* as the process "in which the child's individual cognitive activity is as crucial as the interaction with the knowing social world" (Nelson, 1996, p. 21). Collaboration between the processes of individual construction and social interaction occurs within the medium provided by the culture. In this cultural medium, language is the primary tool for mediating the individual's experience in the world. Yet, it is through social and cultural experience that acquisition of language is possible, and language facilitates the mental processes in individual construction by

allowing thought to be displaced from the self's perspective and the present context.

For Nelson, "the primary cognitive task of the child is to make sense of his or her situated place in the world in order to take a skillful part in its activities" (1996, p.5). Like Piaget, the infant is viewed as adapting to the environment through the sensory-motor system that is pre-adapted but dependent on the environment. Early cognitive development takes place through sensory-motor experience and is unmediated because mediation through semiotic systems is not yet available. The establishment of a mature semiotic system is a long and dynamic process that takes place through social interactions with language in event contexts. The acquisition of language as both a system for social mediation and a system for individual representation is dependent upon the biological and psychological processes that enable the acquisition, as well as the social processes that provide the communicative and linguistic models for construction and the support needed for this construction. Through the integration of knowledge gained from sensory-motor, cognitive, social, and semiotic experience, representational thought develops, hence Nelson's use of the term *experiential* to describe her theory.

What is represented in thought, throughout the developmental process, has qualitatively different levels. For Nelson, humans first come to represent experience in terms of events, before being able to represent through imitation or enactment of events, and finally acquiring the ability to symbolically or linguistically represent knowledge. A summary of Nelson's (1996) extensive

work describing development of these modes of representational thought, or her experiential theory, is presented here. Because Nelson's work is strongly influenced by Donald's (1991) theory of the phylogenetic evolution of human cognition and language, a summary of her book chapter describing his work and introducing her own is provided.

Donald's Phylogenetic Theory

Donald proposed that evolutionary development be based on a series of adaptations that led to the emergence of new representational systems. Unlike previous theories that focused on the importance of object knowledge, Donald contends that the primate mind's building block was not object perception but the event representation, or the ability to see complex moving patterns of stimuli as a unit. These units of coherent patterns are processed and remembered as a unified episode, termed episodic memory. Thus, primates (and other nonhuman animals) can analyze situations only in the present. Recall of information is available only when a present event triggers a past event representation. The situationally-based nature of these representations means they are not available for reflection, either individually or between groups of primates. Episodic memory can only store information as it occurred in that situation, and only a similar environmental experience can trigger this memory.

A qualitatively different form of representing emerged with *Homo erectus* and Donald terms this the mimetic mind because it referred to the intentional imitating of behavior as a means of representation. This advance allowed for the recall and reenactment of experience in a context or situation different from

that of its original occurrence. This imitation, enactment, or the representational movement of the body allowed one to intentionally communicate with others. It also facilitated the cognitive integration of bodily movement within an event and the capacity to recall past environmental experience which was useful in formulating future actions or future plans for survival. In other words, the mind was able to displace thought relative to the body's actions and experiences.

In this mimetic culture, the mind was able to represent the self in relation to the external world. For example, an individual might represent in her mind, and communicate to others, how a weapon was thrown to wound an animal by re-enacting the movement of her body. This cognitive representation could be triggered from re-enactment as opposed to only environmental stimuli as in episodic representation. Mimetic representation was not only useful for communicating with others; it could be used in practicing a skill where the action could be repeatedly analyzed and refined. Social control and coordination became possible as solutions to survival problems could be passed down to offspring in each new generation rather than being continually reinvented by each individual. Labor could be divided as skills could be taught to produce tools and clothing, to hunt and gather food, and to build shelters. Leadership could be recognized leading to eventual social control as certain individuals communicated appropriate actions for others in threatening situations and came to be sought out for direction.

Donald also sees purposeful vocalizations converging or coordinating with bodily representations. For example, individuals might intentionally imitate

the reflexive cry of pain while reenacting how one had injured a leg, or imitate the sound of infant sucking while holding an imaginary baby to the breast, indicating that food gathering activity must cease in order to feed an infant. This mimetic reenactment and use of facial and vocal expressions led to conventional ways of expressing knowledge and was, according to Donald, a necessary precursor and foundation for the emergence of human language. Mimesis provided a means of sharing social knowledge without each individual having to reinvent communicative signs. It eventually "enable[d] the playing of mimetic games and group mimetic acts, and evoke[d] conformity and coordination within the group," also providing a basis for innovation and generativity as well as a form of pedagogy (Nelson, 1996, p. 65).

The rapid proliferation of cultural achievements which occurred around 35,000 BC is viewed as a result of the emergence of complex language. Evidence includes the existence of complex social and religious life, dance, chants, masks, costumes, semiotic devices to indicate clan, status, and totemic identification. Donald claims that these tribal societies used myths to explain, predict, and control their world; he terms this stage mythic culture. The emergence of language as a tool for integrating life experience and generalizing principles and themes into myths or world models contrasts with other theories (Clark, 1973) that proposed language emerged to name things. What Nelson finds so original about Donald's claim is that the emergence of language was not a matter of emerging symbols or grammars but of underlying representational intelligence. The symbols learned in ontogeny came from the

group, yet the individual possessed the potential to acquire, use, or invent symbols for representation.

For Donald the primary function of language is to integrate thought over extended themes; that is, to develop narratives. Through group sharing of narratives, a public version of reality came into existence. The group myth then became the authoritative reality for the group, transmitted and refined through generations to help explain the past and the future as well as the present. Human minds came to interpret and explain the environment through cognitive representation rather than being bound by the environment in episodic culture. Narrative thought required integration and theme building from experience, an analytic capacity. The function of narrative in constructing a group reality, and its resultant survival advantage, is seen by Donald as the force that eventually evolved language into a system for high-speed processing, rapid production, and increased memory and analytical capacities.

This analytic capacity to integrate thought around themes in narrative production also allowed similarities across different event narratives to be abstracted and represented in thought. These similar aspects of events (i.e., concepts with word labels) could also be represented as categories with the words and the attached concepts being substitutable within certain slots. For example, foods and their conventional labels such as banana, masticated cooked rabbit, and cooked yams could be categorized as foods appropriate for infants, and then recategorized in other ways such as fruit, meat, or edible root. From this ability to logically categorize, paradigmatic thought, or the ability to

hierarchically organize concepts, emerged. Both narrative thought and paradigmatic thought became uniquely possible through linguistic representations.

Paradigmatic thought enabled humans to see similarities in events occurring through time. To see similarities in events having long periods of time between them was difficult as important details dropped from memories. These event categories could be made more stable for analyses through graphic representation such as using pictures to record the way trees looked after a flood so that the season when it occurred could be remembered in future planning. The development of more and more complex graphic inventions, or what Donald calls external memory fields, facilitated problem solving. Pictures could be utilized to record a sequence or marks used to tally items in a category. However, this method was not conducive to recording linguistically represented information in an external form. The need to record language prompted the invention of systems for graphically representing parts of speech or for writing, and thereby allowed mental representations to be recorded in greater detail. Written language served to remove the biological limits imposed on working memory by allowing for the written memories (external) to be joined with current thoughts (internal), resulting in representations that incorporated both. This cognitive capacity to graphically represent information was not the product of human biological evolution; it resulted from cultural invention.

Cultural use of external memory marks Donald's final stage, theoretical culture. According to Donald, written language provided a shared knowledge

system that could be maintained in a stable form. At this point in cultural development, memory was no longer limited by biological constraints and could be vastly augmented through access to external memory devices. If cognition is proportionate to operations on information represented in working memory, then the extension of available information through written language around 1,000 BC "must be the source of enormous advances in cognitive achievement of the historical period" (Nelson, 1996, p. 72). For Donald, the difference between literate and nonliterate cultures has nothing to do with biological evolution and everything to do with the cultural invention of systems for external symbolic storage (ESS).

Where narrative thought required the analytic capacities to integrate and to generalize from biologically stored information, paradigmatic thought supported by ESS systems provided the stability that allowed for the analyses of large amounts of technologically stored information for theory construction. Pedagogical practices within societies utilizing ESS systems or theoretic cultures are designed primarily to teach skills for using these ESS systems.

Donald proposes that the evolution of each qualitatively different mode of representational thought did not replace earlier modes. Existence of event representations and mimetic representations is inherent, or necessary, to linguistic representation. Contemporary human adults in industrial cultures have what Donald and Nelson call hybrid minds, or minds composed of episodic, mimetic, oral narrative, and theoretical representations.

Nelson's Ontogenetic Analogies to Donald's Phylogenetic Theory

Nelson initially makes clear that her analogy to Donald's theory does not compare the human infant to the ape, or the preschooler to *Homo erectus*. The human child develops within the contemporary cultural milieu and those born into technologically advanced societies are not developing in cultures that are first episodic, then mimetic, and then mythic, before becoming theoretical. Children within the dominant culture are born into a hybrid culture to educated parents having hybrid minds (see figure 1.1). These parents direct the child's attention toward the symbolic representations present in toys, books, videos, and computer programs from a very young age. Nelson points out that her theory is speculative but also presents substantial biological evidence to support her experiential view of language in cognitive development. Additionally, she presents parallels between Donald's phylogenetic stages and the developmental stages of Piaget (1970), Vygotsky (1934/1997), and Bruner (1966).

Nelson uses Donald's theory to conceptually integrate the biological and the cultural aspects of human cognition. Nelson's theory, like Donald's, views the event representation as the basis for cognitive and linguistic development. In support of Piaget, Nelson recognizes that infant learning of routines, or a series of related events, is an individual process; however, routines are socially guided activities. In these socially guided activities, the adult directs language to the infant in a conversational tone and encourages the infant to participate by quieting for infant vocalizations and responding as if they were meaningful turns

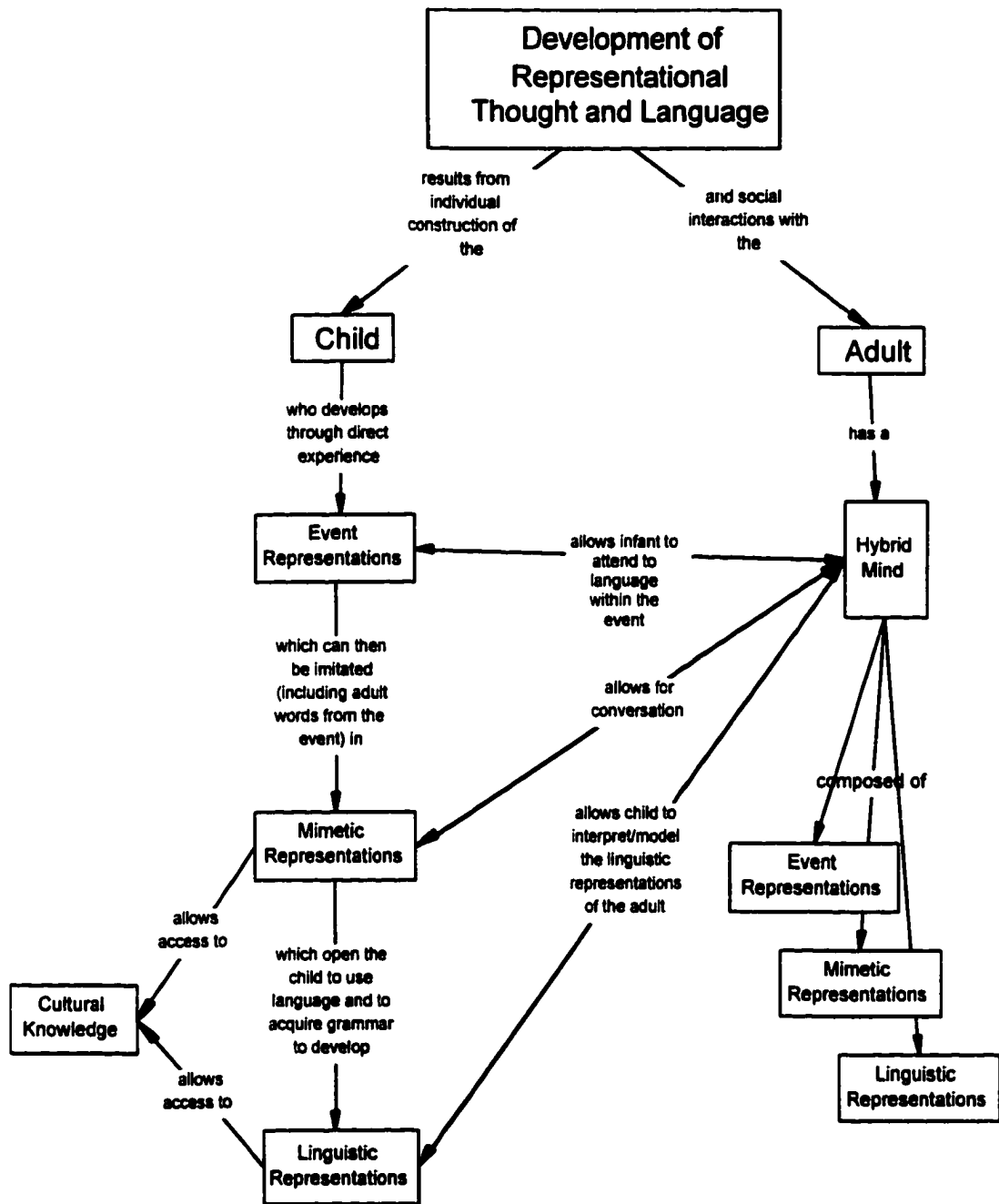


Figure 1.1
Development of the representational levels in Nelson's experiential theory.

in conversation. As the infant and adult begin to jointly attend to certain aspects of the activity, the adult repeatedly refers to the object currently used in actions. The most salient word(s) from the adult's talk during the action is integrated into the child's event representation. First words emerging from the event representations of toddlers are not truly linguistic representations, but are mimetic or reenactments from events. Near the age of two years, the child motorically imitates adult action from the event so that upon seeing a toothbrush, the child might typically bring it to her mouth uttering "teef." The child's verbal form is a motoric imitation or reenactment of the adult's and does not carry the conventional meaning; it is a perception of part of an event.

The first three years of childhood mark a transition from representing in terms of events to also representing in terms of motoric imitation of the action experienced in events. This representational ability drives pretend play and first words. Mimetic representations are not true language, yet they pave the way into language because adults respond as if the one-word utterances and actions of the toddler carry conventional meaning. In the toothbrush example, the parent might respond by saying, "Yes, we brush our teeth with a toothbrush. Look in the mirror. See your teeth (*pointing them out to the child*). Brush those teeth to get them clean. Here's Mommy's toothbrush. Brush Mommy's teeth (*pointing out her own teeth*). Everyday we brush our teeth. Tell Mommy, 'brush teeth'."

First words are embedded in event representations where function is the focus. Through mimetic activity the child is able to participate in social

interactions, facilitating further language acquisition. Eventually, this acquisition of words and increasing social participation results in a functional change allows for the transition to linguistic representations or the ability to utilize language as a meaning system. The development of language as a way to mean drives the rapid vocabulary growth during the second year of life. During this period, language can be used for communicating meaning but linguistic representation is limited to the child's own direct experience.

The child under three cannot create mental representations from the words spoken by others such as descriptions of novel future events or descriptions of the experience of others. Conceptualization from others' language is only possible if the language represents the child's own direct experience as the child cannot yet separate self-experience from others' experience. Yet the child is able to linguistically represent past and present experience, and experience that is likely to be repeated in the future.

During the transformation to actually being able to use the linguistic representations of others' experience, children are first only able to merge these linguistic representations of others with their own linguistic representations for their own experience. By the age of four years, children have developed linguistic representational ability and can use the language of others in context as input for constructing their own mental representation so that they begin to learn through the language of others without direct experience. Before the age of four years, the language of others cannot be represented separately from the child's own representations for direct experience because the language of

others remains directly connected to these representations for direct experience. Further development is necessary before two separate representations can coexist. Being able to use the language of others to represent events that are not the child's direct experience requires learning language rules or grammar.

Children derive lexical and grammatical knowledge from participation in social discourse. This is a complex process over the course of early childhood whereby the child identifies the relevance of the word from the context in which it is used. The context or discourse gives clues to meaning so that the child begins to be able to interpret partial meanings and to acquire more structure from complex sentences. Complex language is first extracted from discourse without full meaning attached. Pragmatic use and the response of others provide further clues to meaning, allowing the child to take part in more and more conversational turns with less and less scaffolding. This pragmatic use facilitates the child's developing hierarchy based on semantic organization of concepts and syntactic organization of relationships. Eventually, the hierarchical organization allows the grammar to inform meaning more than the words for concrete objects or actions. Over time and with much development and practice, subordinate terms such as *not*, *different*, or *between* can be used in representing the knowledge or experience verbalized by others.

Because the same events such as eating, bathing, and dressing are common to children in other households, children within a culture develop similar scripts. Scripts are linguistic representations for a series of events that

make up these routinely experienced activities. Between the ages of four to five years, the child begins to be able to carry on extended conversation with same age peers and eventually peers are successful at introducing nonshared information. This is indeed a cognitive milestone, as the child must be able to recognize more realities than her own direct experiences in order to gain knowledge from others. Additionally, the child is beginning to use language to partition the world in the ways of the culture, in other words, thinking in language is coming to think culturally instead of only thinking individually or even socially. Language does not belong to just the individual or the family, its forms and structures are culturally embedded.

Language, Cognition, and Memory

Infant memory for event representations is transformed during early childhood to develop autobiographical memory. This transformation begins as routines are established during infancy. Routines such as eating and bathing, although occurring with some variation, build up invariant skeletal structures or scripts for the infant. Memory preserves information about events that are routinely experienced while much of the child's other experience is not retained or is overwritten. This overwriting feature ensures that the child remembers aspects of direct experience that facilitate adaptation to the biological and cultural environment and also allows the child to drop out of memory less relevant experience.

The events routinely structured by the adult inform the child as to what is relevant to hold in memory. Parent talk within routines occurs both in the

narrative mode and the paradigmatic mode. Narrative talk about memory in parent-child dyads during the preschool years appears to facilitate the transformation from episodic memory to autobiographical memory. The child, using mental scripts for routines that include bits of salient adult action and language from that routine, engages the parent in the social construction of the past, present, and future events. The parent provides past, present or future frames for talking about the event based on awareness of what the child knows or has previously constructed as a script and thereby facilitates the child in constructing memories of self-experience. These memories become part of the child's concept of self. This explains the phenomenon of infantile amnesia experienced by all older children and adults. Until the child has developed scripts and has entered into language, she cannot construct memories of her own experience. In event representations it is not necessary to distinguish the self from the ongoing activity, nor is it necessary in mimetic representations where the self is motorically engaged in representing the activity. Yet, in language representations, the child comes to think of the self as separate from the present experience and as having a past and future.

As the child integrates more language into her mental representations she is more able to use the parents' verbal representations of her own direct experience as reinstatements of that experience, thus supporting her developing autobiographical memory. Autobiographical memory serves to construct a concept of a self existing over time. It also provides a way to enter into the social world as the child develops personal narratives or the ability to

share past experience and future plans with others. Parent narratives of the child's past, present, and future experience help the child to frame events and also influence the child to remember what is important in socio-cultural knowledge domains. This developing memory of cultural knowledge domains facilitates paradigmatic memory development so that the child can eventually open to the theoretical schemes of the culture. And so as the child's basic memory for events is transformed into autobiographical memory, the two modes of thought, narrative and paradigmatic, are intertwined in development.

Language, Cognition, and Narrative

Narrative is a form of thinking about the self or a way of being and behaving within a socio-cultural group. Narrative is also a discourse genre, a means of conversing within an organizational structure to convey and to receive socially valued knowledge. Both narrative thinking and narrative discourse are crucially related to event knowledge, the basic form of cognition in early childhood. Through participation in routine events, children develop scripts such as those experienced in the morning dressing routine. These scripts or portions of them are first displayed in mimetic forms such as actions in pretend play and in one-word utterances. The child might pick up the hairbrush and bring it to her hair saying "hair" with the mother responding, "Yes, we brush your hair with a hairbrush." The child through social interaction gradually gains competence to verbally represent her script or her cognitive basis for understanding how things are in the world so that the child several months later might pick up the hairbrush, bring it to her hair and say, "Brush me hair." This higher level of

control requires much practice, yet the child is still only able to communicate in terms of the present.

To be able to talk about the past or future requires assistance. The child must hold in mind the present and go back or forward in time to the beginning of an event and arrive at the end before returning to the present. This narration, to be cohesive, requires the use of complex syntax including relative clauses, causal connectives, anaphoric pronominal references, and most importantly temporal relationships. The child's first use of these syntactical devices is used without full control. They originate not semantically, but pragmatically to fit the discourse patterns acquired from adult speech. Initially terms such as *while*, *because*, or *they* are simply added on without carrying meaning; however, their use facilitates acquisition of their meaning. In this way sentence grammar and discourse grammar are seen to be developing interdependently rather than sequentially as previously assumed.

Parent talk about the events the child has experienced in the past and those anticipated in the future provides important models for children's narratives. These first narratives are expressions of children's understandings of the expected or the script. Scripts serve the primary function of establishing stability or the canonical events from which true narratives are deviations. Additionally, semantic usage of temporal terms appears earlier in well-known scripts than in novel story productions. When skill with these temporal forms is first established within the well-known script, they can later be used to structure novel stories.

As discussed earlier, the child's representational system at this time is episodic/mimetic and beginning to incorporate linguistic representations or being able to hold in mind self-experience as well as linguistically entered representations, of their own experience, from adults. It is when they begin to incorporate linguistic representations of others' experience that children often appropriate parts from the narratives of others into their own narratives, most probably because the source of the representation is obscured. The child in the language acquisition process is struggling to be able to dually represent experience of self and of others. Narrative construction of individual experience that is not shared by others is also problematic. To relate to others her own independent experience requires more skill than that involved in relating shared experience where scaffolding is provided by the adult. The child is driven to acquire the skills for relating self-experience as individual family members tell about important or interesting events in their day or tell about an unusual experience of the child. The child learns that it is the deviation from the expected that is of interest to others.

So as the child moves from relating scripted experience to relating a novel experience, much language development occurs. To tell and to comprehend narratives, the child must have control of many linguistic forms. In a reciprocal way, pragmatic use of linguistic devices gives the practice needed to develop competency. Thus, narrative development is closely tied to language development and cognitive development in a complicated and fault-ridden process. The child, in comprehending narratives of others, must first take the

story of another and match it to a script or memory of her own to gain meaning. Later the process is complicated more as the child must be able to use a story that does not match any of her own to create meaning. Here the child must combine her existing mental representations to try and construct the other's story, often resulting in misunderstanding. To construct a coherent whole from one telling of a story requires much development.

Perhaps children request certain stories to be told or read over and over again as a way to gain assistance in constructing the stories' meanings. Parent retellings and repeated story readings provide this practice to many Western middle-class children. In this process, children gain access to the universal themes or shared human concerns of their culture, which provide a means of understanding their world. Over time this exposure to and practice with narrative expands the child's experience of the world. Narrative comes to dominate thought through the process of overlaying basic script understandings or episodic memories with cultural understandings of time, space, number, geography, life science, gender roles, moral reasoning and actions, and religion as well as other areas. Parents do not purposefully set out to teach narrative, but through exposure to narratives, an integral part of the socialization process that is intergenerationally transmitted to the parents and on to the child, narrative skills are developed.

Language, Cognition, and Paradigmatic Thought

Infants, like other complex animals, innately possess some ability to perceptually categorize objects; however, acquisition of a culture's given

taxonomies results from exposure to and experience in language. Hierarchical categories, even those for concrete objects, are abstractions formulated in language and therefore exist as symbolic cultural realities and not concrete realities. Vygotsky described conceptual change or the development of hierarchical categories in a way that is compatible with Nelson's description. He saw the emergence of scientific concepts, culturally transmitted in language, as emerging from spontaneous concepts that were individually acquired.

The functional core hypothesis (FCH) (Nelson, 1974) was developed to explain how infants spontaneously formed object concepts from which their first words were thought to emerge. It was later extended to hypothesize the manner in which any new concepts were formulated and held that children's concepts of objects are based on function as the core and form as a "probabilistic periphery used to identify instances of the concept" (Nelson, 1996, p. 228). The FCH was presented in opposition to viewing children as abstracting perceptual features as the basis for concept formation and word meaning. Nelson presently recognizes that both functional and perceptual features may be extracted in collaboration in concept formation. Intrinsic function (what an object does) can also be a perceptual feature. The way in which something is perceived may not differ from its function (e.g., a rattle is perceived as an object that makes noise and seen to function to produce noise); however, function is the more critical component of conceptual structure. Extrinsic function on the other hand, relates primarily to how people use the object and although it involves perception this relationship is functional and not perceptual.

Nelson's FCH was further developed using Rosch's (1975) proposal for a basic level in natural language semantic hierarchies with related superordinate and subordinate levels. Basic levels, those in which members of a category have the most similarities in perceptual and functional features (e.g., spoon), are acquired first. Subordinate categories based on perceptual features are acquired next (e.g., baby spoon, teaspoon, plastic spoon, sugar spoon) with superordinate categories defined by function forming later (e.g., silverware). Superordinate categories can develop only through language as they are abstractions for including various concrete objects functioning in similar ways. The child has the problem of deriving adult meanings for terms specifying superordinate classes. To do this a child must be able to reconcile individually constructed knowledge systems with culturally derived knowledge referring to the same domain. This reconciliation emerges over time as adult language is integrated with the child's event representations and involves organization of events and organization in language.

Events can be organized into thematic or taxonomic hierarchies.

Thematic organization entails a part-whole hierarchy containing subevents such as *lunch* which includes what happens with what objects before eating (getting put in the high chair, having bib put on), during eating (bowl, spoon, and cup are acted on by parent-child), and after eating (hands and face are cleaned with a wet cloth, child is removed from the high chair). Taxonomic organization is seen as the combining of two or more types of events into more general or inclusive

hierarchies such as the breakfast, lunch, and dinner events belong to the meal category.

An organizing principle of language according to Saussure (1915/1959) is the syntagmatic-paradigmatic axis. The syntagmatic relation applies to how words can be sequentially combined while the paradigmatic relation applies to the substitutability of words in a particular slot. So, as events can be organized thematically and taxonomically, language can be organized syntagmatically and paradigmatically. The integration of syntagmatically organized language with thematically organized events simultaneously supports and is supported by paradigmatically organized language integrated into taxonomically organized events. The relationship of this development is dynamic as both configurations reflect different relations based in the same conceptual organization. Yet how does this development proceed?

Parents most often use terms at the basic category level while children are acquiring first words and include superordinate category terms only in more familiar events such as eating and dressing. For example they might say, "Eat your *food*. Here are carrots and potatoes and chicken." or "Let's put on your *clothes*. You can wear your red shirt and your blue pants." Language, entered into the child's event representations, is critical to the child's parsing of events and objects. Over time children construct relations between particular events and the objects acted upon in those events so that particular slot-filler categories (e.g., things that are eaten for dinner, things that people wear) for single events begin to form.

Initially, children have difficulty accessing more than one slot-filler category at a time and have not yet begun to organize conventional or superordinate categories such as *food* to include all things that can be eaten at breakfast, snack, lunch, and dinner. The child's mental event representations support slot-filler category formation, but it is the culture's conventional categorization that must eventually be coordinated with invariances in the child's experience (i.e., event representations) for concepts to be formed. As language or conventional terms are acquired in the child's existing slot-filler categories, the terms are conceptualized and are freed to be used in different scripts or contexts. Slot-filler categories provide a paradigmatic bootstrapping mechanism to access the more general conventional categories of the culture. Concepts of categories are derived not by perceptually abstracting similar objects from all objects that exist as described in earlier theories, but through action sequences using objects with culturally appropriate language accompanying the actions. It is through language that children learn to organize the world in the ways of the culture in which they live.

This discussion of paradigmatic thought can be related back to the discussion of narrative thought by recognizing that children first make sense of the world through expanded event representations or scripts for routine activities. These scripts must be in place to support the construction of narratives or deviations from the canonical script and the formation of slot-filler categories or the combining of representations experienced in the same slot of routine events. Thus scripts are the basis for both the development of complex

narratives and complex hierarchical categories. It is interesting to note that at the same time abstract organization of semantic categories (e.g., food, clothes, animals) is emerging, autobiographical memory and personal narratives are also emerging, with all being language dependent structures. Through language the child learns to make sense of the physical and social world and language provides access to the cultural resources for individually reconstructing the established socio-cultural knowledge. Scripts or cognitive models for making sense of the world provide the stability in early childhood for this later development.

Language, Cognition, and Temporal Concepts

The event representations of the child are inextricably related to the development of temporal concepts in the following ways. The order of actions within events has a temporal sequence, a basic dimension of all event representations. The location of events in time is often referenced in naming events (e.g., lunchtime, bedtime). Events have duration periods as well as time intervals between events. There are temporal boundaries marking the beginning and end of events. The speed and frequency in which events are experienced are also time-related concepts.

Event representations function to aid the child in perceiving the world or how things can be expected to proceed. To function in this capacity, sequence, frequency, and duration must be mentally represented. These concepts of time embedded in the child's representational system most probably form the basis for acquiring the linguistic forms (e.g., *now, then, next, sometime, every time, a*

little while, a long time) to express them. Terms for direct relations of sequence, frequency, and notions of duration that are represented in event knowledge appear to be acquired and used meaningfully in event contexts relatively early. They also are easily extended to new experience in appropriate ways.

In contrast, preschoolers rarely use culturally conventional time measures such as hours or weeks and instances of their use are usually inaccurate. Time measurement and time outside of the present are not supported in the event representations of children. These are social constructions and must be acquired through language. Acquiring conventional locations in time is not a product of individual cognitive development alone, but results from social-linguistic experience.

Time language does not relate to concretely experienced phenomena and must be abstracted from the language of others. The first uses of temporal terms are found to be lacking in conventional meaning and are more or less added on in particular slots based on adult discourse patterns. Knowledge of temporal expressions is gradually developed in linguistic experience with others where temporal terms are modeled and acquired by the child. Children seem to interpret and use these terms first as neutral connectors within event representations. Over time, the use of temporal terms and the adult responses that extend, expand, and expatiate the meanings of these terms may allow the child to begin to conceptualize past and future time distinguished from the present. These meanings may only develop with practice in extended discourse where events from the past or future can be moved linguistically toward or from

the present. In extended discourse the child must continually adjust how she represents the possible meanings of terms and how she represents reality.

The child must somehow coordinate the passage of time in human life (i.e., birth, childhood, adulthood, old age, death) with the natural or cyclical passage of time (i.e., days, lunar months, seasons). Conceptions of time help organize human experience, distinguishing the past, present, and future activity by the overlay of time measurement systems. These systems are culturally invented to stabilize experience into units to be linguistically and mentally represented and manipulated. Yet, the child cannot acquire these cultural constructions or knowledge systems from direct experience. Acquisition depends on explicit mediation through language. Only through the representational function of language can the child acquire cognitive capacities to conceptualize temporal relationships. Cultural differences in the way time is conceptualized results in different organizational systems of differing complexities; however, all cultural systems for imposing temporal order are inventions for representing human time simultaneously with natural time.

Language, Cognition, and Social Understanding

Nelson rejects what are termed theory of mind theories or views of children as understanding other people's mental states through the development of a theory about the mental states of others. Theory of mind research has been of great interest in recent years and has focused on the observed shift in children's responses between ages 3 and 4 years on the false belief task. Nelson feels that theory of mind theories do not explain the

conceptual changes in the child's representation of reality. Nelson rejects the notion that very young children or even adults – outside philosophy and psychology or related studies – develop theories about the minds of others. In contrast, Nelson views children as situated within a cultural context where representations or working models of the world are developed in the process of making sense of experience rather than viewing children as constructing abstract theories. She sees the missing link in “theory” theories as the mechanism of semiotic mediation. Children need language for understanding minds.

Nelson's experiential theory maintains that children develop working models between age 3 and 4 years. This period marks the shift in the child's representational system from episodic/mimetic to also being able to create representations linguistically. This capacity results from both social participation in a cultural context and individual cognitive construction so that this developmental process can be viewed as *collaborative construction*. Only when the child is able to create representations from the verbal forms of others rather than only creating representations from direct experience, can she conceptualize others as having different experiences. As described earlier, the child under four is struggling to be able to dually represent experience of self and others. Because of the difficulty of holding in mind the two separate representations, the child often conflates the two before developing true linguistic representational ability. This theoretical stance explains the three-year-old's inability to pass the false belief task.

In regard to the developing child's social knowledge, Nelson proposes that children do have innate knowledge of their human caretakers as being like creatures, and it is through language that they acquire knowledge of humans as being different. By the age of 18 months, the child has some knowledge about mental states of others. This knowledge is acquired in emotional exchanges between family members although understandings are not well formed concepts represented by words. Words for mental states (e.g., think, know) provide a way for people to exchange feelings, beliefs, and ideas. Yet, the meanings of these words are only implied during social exchanges. Like other abstract lexical terms, children gradually acquire word meanings for mental states through their own interpretive and often faulty use of the terms. Through interactions in social discourse embedded with emotion, belief, or desire statements referring to the child or others, children add complexity to concepts of their own mental state and those of others. Direct instruction by adults to explain why people react or feel as they do assists the child in clarifying word concepts and developing a more coherent semantic system. Participation in language provides the necessary scaffold to maintain a dual representation of individual reality (i.e., representations from direct experience) and representations from the externalized linguistic representations of others.

The child learns about her own mind at the same time she learns about the minds of others. This is a gradual process where self-knowledge is gained as language referring to the child and to the mental states of others comes to be appropriately interpreted. These interpretations form a system of concepts

about mental states having specific labels. These labels or words can be utilized to facilitate social interaction and understanding. The language of others helps the child to be able to understand herself. Understandings of self can be projected to understand the actions of others. The simultaneous cognitive emergence of self-knowledge and knowledge of others underscores the crucial relationship between cognitive development and language interactions with caretakers. Language uniquely enables the child to understand others as having sources of knowledge not available to the child and vice versa.

Collaborative Construction

For Nelson, language is the vehicle of enculturation, the content and structure of internal representations, and the tool of complex thinking. Early childhood encompasses a dramatic change in both cognition and communication. This change from prelinguistic thought to linguistic representation is only possible through the establishment of shared symbolic activities from which mimetic representations emerge. Between the ages of one and three years, these mimetic activities are the primary means by which the child structures and carries out activities. These years entail very rapid language development in which the child acquires capacities for propositional expression and pragmatic communication; however, true narratives and the capacity to exchange memory with others is not available to the child until true linguistic representations are developed around the age of four years.

The general representational advance in the knowledge domains observed at the age of four years is dependent upon representation in

language. Knowledge systems, established by the culture and made accessible to the child through language, must be coordinated and integrated with the child's individually constructed knowledge. Linguistic representation propels development in communicative skill and development in each knowledge domain so that more formal cultural knowledge systems can be accessed through explicit imparting of knowledge.

Parents facilitate the acquisition of cultural knowledge as they explain aspects of the world not directly experienced by the child. Using appropriate levels of language complexity, parents can convey to four-year-olds knowledge of such areas as animals, occupations, machines, geographical areas, measurement, law, and morality. To benefit from extended explanations, the child must be skilled at high speed processing and representing of verbal forms, skills necessary for learning in the classroom and eventual learning through external symbolic systems.

In summary, Nelson presents cognitive development as story of the self arising from social experience. The child comes to know the self through the language of the culture. Self-awareness begins early in infancy but representation in language must be in place to conceptualize a past and future self or others with different pasts, presents and futures. Representation in language is also necessary for the self to move beyond organization of individually experienced events to being able to conceptualize the culture's categories. This autobiographical self is collaboratively constructed from the shared meanings of the community and is only possible through language. The

child's engagement in mimetically representing socially mediated scripts potentiates this entrance into language. These mimetic representations emerge as children motorically imitate knowledge of events. These event representations that support mimetic or more displaced representation are, therefore, the basic organizational units of language and cognition. Event representations result from the child's direct experience with caretakers in recurrent activities.

The Situational-Discourse-Semantic Model

Working in the field of communication sciences and disorders, Janet Norris and Paul Hoffman developed the original SDS model for guiding intervention practices with language learning disabled individuals. They recognized that assessment or intervention practices designed to target separate knowledge domains (i.e., cognitive, semiotic, social, and sensory motor) did not reflect the integrated picture of language and cognitive development that current research made clear. Existing holistic theories of language and cognitive development did not integrate these findings into a well-defined structure that could be useful for facilitating the interventionist in planning effective integrated learning experiences and that could be delivered in natural but complex contexts. Decision making on the part of the interventionist could be facilitated by first assessing the individual's ability to represent information where learning could occur or to process input to the cognitive, social, semiotic, and sensory motor knowledge domains.

For the SDS model to be useful in guiding intervention practices for atypically developing individuals it obviously had to be based on typical development. This model could then be useful for facilitating atypical children in moving closer into the typical range for Western middle-class children and, thereby, improving their access to the cultural capital. After several years of attaining positive results from intervention strategies based on the SDS model, Norris and Hoffman (1997) adapted it to include early acquisitions and functioning (see figure 1.2).

Although there are many parallels between the SDS model and Nelson's experiential theory (see figure 1.3), each offers unique insights. The similarity of the two theories rests in their endeavors to conceptualize the complex dimensions that shape human language and cognition. Nelson views these complexities in terms of dimensions or components that result from both biological and socio-cultural conditions and terms them *representing*, *organizing*, and *processing*. These dimensions are essentially synonymous with Norris and Hoffman's terms for the SDS model's components: *Situational*, *Discourse*, and *Semantic*. Nelson thoroughly discusses the development of self-knowledge, knowledge of others, world knowledge, and concepts of time within the *representing* dimension; the development of narrative and paradigmatic thought and language within the *organizing* dimension; and memory and the developing capacity to access cultural ways of meaning in the *processing* dimension. Norris and Hoffman, on the other hand, provide more detail regarding the interrelationships of the same dimensions (termed Situational-

Discourse-Semantic in their model) as well as describing in greater detail, the qualitatively different levels of representational ability in development. Their descriptions help to explain how development that is impeded along one dimension will ultimately affect development along the others.

Together, these two perspectives appear to provide a strong theoretical foundation upon which to base educational practices for all young children and, more broadly, all learners. While Norris and Hoffman (1993) were influenced by the earlier work of Nelson (1985, 1986, 1989) as well as numerous others in originally laying out the SDS model, Nelson's later work (1996) appears to provide additional support. In describing the SDS model, I generally summarize Norris and Hoffman (1993, 1997, in press); however, the language of Nelson (1996) and others occasionally creeps in to assist the reader in recognizing where parallels exist in these theoretical perspectives. Where I have done this, I make reference, although the thought is actually a blending of Norris and Hoffman with other theorists.

To realize both the distinctive character of each continuum of the Situational-Discourse-Semantic model and to also discern their

interconnectivity, it is helpful to conceptualize knowledge as emerging through four domains. Although it is also necessary to conceive of each domain as interrelated to the others with each functioning to support development within all other domains. These domains relate to knowledge constructed through input to the *sensory* system and through output by the fine and gross *motor* system, *cognitive* knowledge of objects or internal representations of the

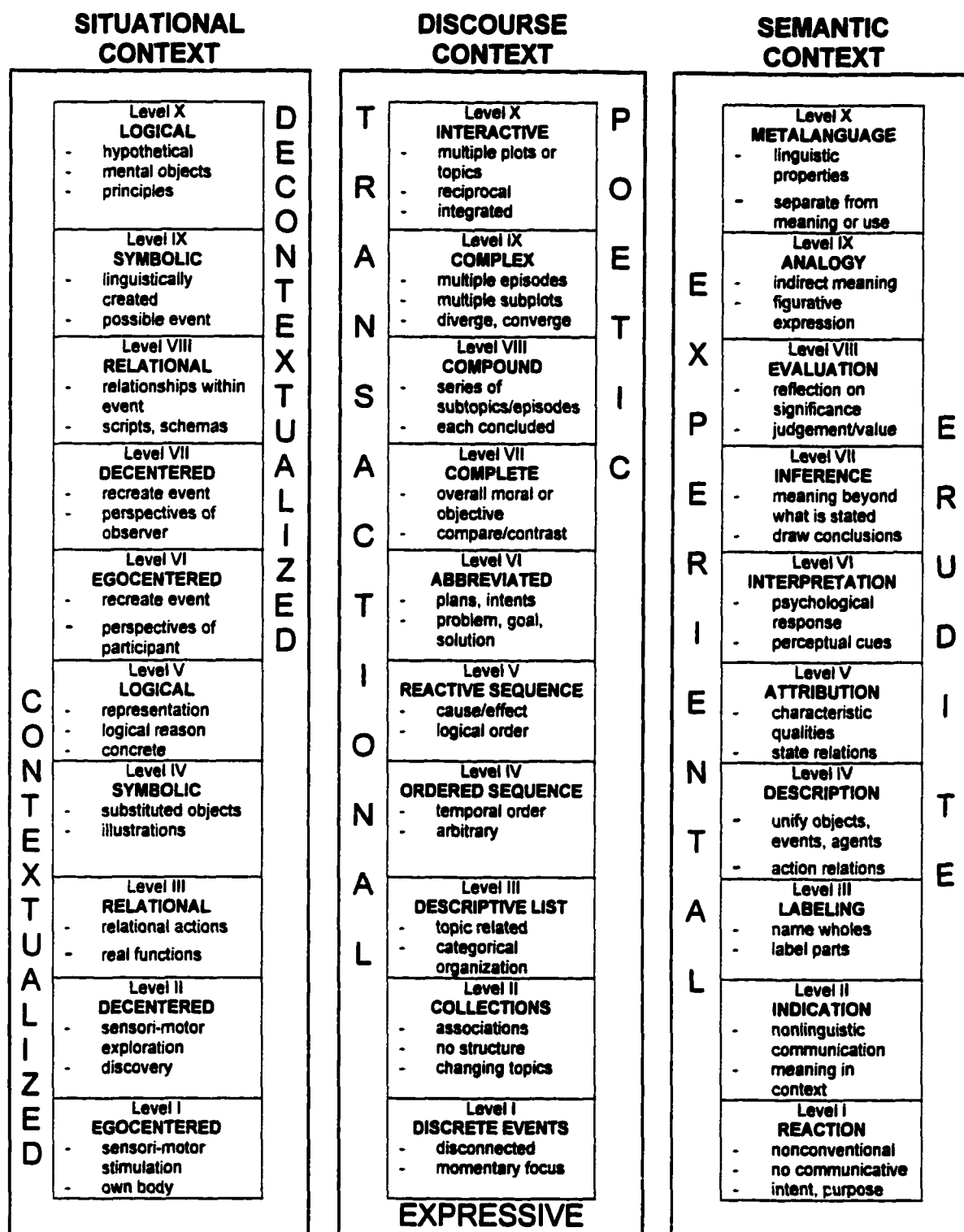


Figure 1.2
 The Situational-Discourse-Semantic Model. Source: Norris, J.A. & Hoffman, P.R. The SDS: Development Model of integrated functioning. (Unpublished assessment scale) by J.A. Norris & P.R. Hoffman, 1997, Baton Rouge, Louisiana. Copyright ©1997.

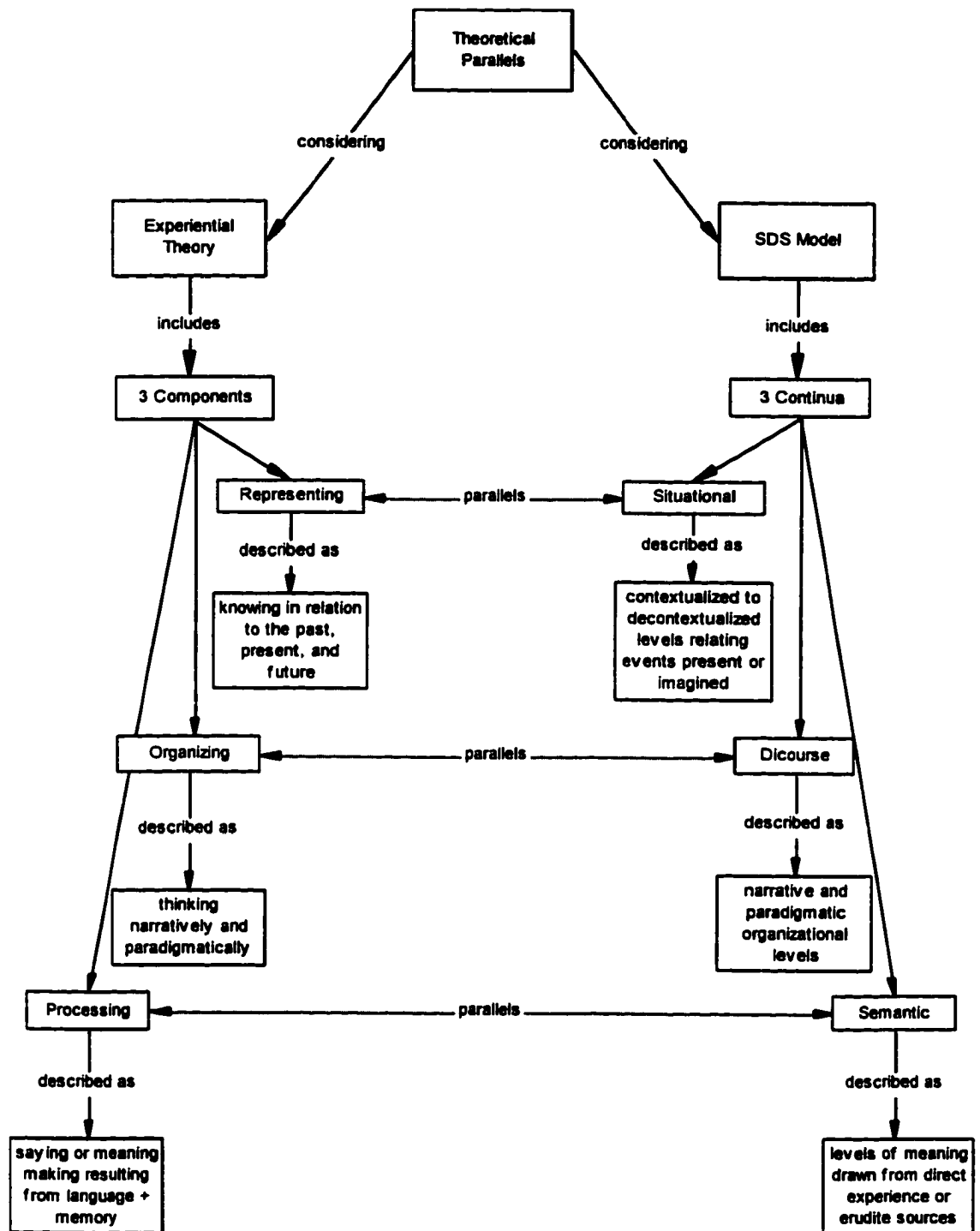


Figure 1.3
Parallels between experiential theory and the SDS model.

external world, *social* knowledge or the relation of self to others, and knowledge of signs for referring to mental representations or *semiotic* knowledge. Again, these knowledge domains do not function independently within the typically developing individual, but “function synergistically as one coherent and coordinated system” (Norris & Hoffman, in press). To further explain this phenomenon, Norris and Hoffman write:

But we learn about objects and their functions by watching others use them, and listening to their suggestions as we try to use objects [sensory motor domain]. The more that we can use language (semiotic domain) to maintain the interaction (social domain), the more we learn about the objects (cognitive domain). Thus the domains are not separate, but rather integrated and reciprocal in their influence on each of the others (Norris & Hoffman, in press, p. 6).

The Situational Continuum

The Situational continuum characterizes the individual's movement away from egocentrism. It is this conception of the Situational continuum, that Norris and Hoffman offer major insights on the development of representational thought and language. Although this continuum conceptually parallels Nelson's component termed *representing*, the Situational continuum more clearly illuminates the qualitative differences or gradual increases in displacement ability. Whereas, Nelson as well as other researchers highlighted the role of imitation in the development of symbolic representation and the means for first developing displaced thought, Norris and Hoffman provide descriptions of 10 detailed levels by which displacement develops. Seven of the 10 levels were appropriate for designing the representational tasks used in this study with

prekindergarten children and are presented at the conclusion of this discussion of the Situational continuum.

The newborn infant has no pre-existing internal representations for the external world, yet is able to respond to environmental input to the sensory-motor system. The absence of internal representations causes the newborn to cease processing when the external stimuli are no longer present. It is only through repeated experience in routine events that the infant is able to construct representations to enable learning and processing to take place at increased displacement from the child's own body and from present sensory stimuli. The Situational continuum describes changes in the child's ability to represent experience at higher and higher levels of displacement. These changes are brought about as representational schemes are constructed through the integration of representations or knowledge constructed in the cognitive, social, semiotic, and sensory-motor domains.

Conceptual definitions for the Situational, or representational, levels of the SDS model (see figure 1.2) used in this study include:

Level III: Contextualized Relational - The ability to represent the canonical event through re-enactment of self-experience using real props.

Level IV: Contextualized Symbolic - The nonverbal ability to symbolically represent acts from a familiar routine when presented with pictures.

Level V: Contextualized Logical - The ability to represent familiar experience when minimal props are available in miniature form and verbal symbolic ability is required to create the context for explaining the bedtime routine.

Level VI: Decontextualized Egocentered - The ability to symbolically represent the entire familiar routine with language.

Level VII: Decontextualized Decentered - The ability to represent knowledge that was not the child's self-experience (but was originally encountered as a contextualized, visual experience such as a storybook) independently of the context (storybook) using knowledge of narrative structure (story grammar) to help recall and retell what was experienced in a contextualized, visual experience.

Level VIII: Decontextualized Relational - The ability to represent knowledge of how of a personal and individual routine could be related to a deviation condition that required the generation of a similar routine for a familiar group in a familiar setting.

Level IX: Decontextualized Symbolic - The ability to generate a narrative using story elements (story grammar) and to symbolically represent these elements with language.

The individual's progression along the Situational continuum is manifested in behavioral changes. These changes result from *cognitive* displacement or from knowledge of physical objects to knowledge of representational objects, *social* displacement from lack of self-awareness to eventually taking on the perspectives of others, *semiotic* displacement from responding to highly contextualized language to highly decontextualized language, and *sensory motor* displacement from reflexive movement to imitative and creative movement. Yet development cannot be viewed only as a progression in displacement abilities.

The Discourse Continuum

The Discourse continuum refers to the organization of representations into schemes. As newborns experience events, they begin to construct representations for discrete parts of the event. These discrete representations of experience are integrated into the cognitive, social, semiotic, and sensory motor knowledge domains to form unelaborated schemes. Schemes are

gradually interconnected to form event representations. Objects acted upon in similar ways within events begin to be grouped (e.g., infant foods) as well as being linked to objects from other parts of the event (e.g., highchair, bib, bowl, spoon) so that scripts for the verbal component of the event structure (e.g., what happens at mealtime) are formed.

As described in the discussion of Nelson's work, scripts are the basis for slot-filler category formation and allow the child to access the culture's paradigmatic organization of the world. Likewise, scripts provide the foundation for later narrative construction¹. Like Nelson, Norris and Hoffman see development in the two areas of organization as simultaneous. Additionally, the way in which events can be represented and expressed is seen as maturing alongside narrative and paradigmatic event/discourse organization (Applebee, 1978; Nelson, 1996). Discourse in the expressive or conversational mode shifts across narrative and paradigmatic modes as the individual takes both the perspective of the spectator and the participant; therefore, organization need not follow a pure structure (Applebee, 1978).

As organization increases in complexity, event representations become more structured and elaborated in the *cognitive* domain so that behavior in routines becomes sequenced and goal-directed, story elements begin to appear, and slot-filler categories provide access to culturally organized hierarchies (Nelson, 1996). Interaction with others brings on self-awareness or *social* knowledge. Reflexive behaviors begin to be replaced with intentional behaviors as *semiotic* systems or signs useful for affecting others are acquired,

as well as resulting from the advent of *oral-motor* and *fine/gross motor* coordination. Development along the Discourse continuum allows for experience represented at various levels of displacement (i.e., the Situational continuum) to be organized at various levels of complexity.

The Semantic Continuum

Still another dimension in developing representational intelligence involves movement along the Semantic continuum. Early representations result from patterns of sensory input and are iconic with no assigned meaning. As Norris and Hoffman point out, through the processes of assimilation and accommodation described by Piaget (1937/1954), representations grow in complexity and are increasingly displaced from the perception. As representations become displaced from the present and increase in complexity, generalized concepts, described as *spontaneous* by Vygotsky (1934/1997), begin to emerge from the event representations. As these concepts parse out from the event representation they are continuously refined as representations are recombined in the continuous assimilation and accommodation of new experience. Through this process, the child is opened to cultural concepts or what Vygotsky called *scientific* concepts (1934/1997).

Development of these conceptual understandings allows the child to increasingly interpret objects, actions, and signs for specific representations with meaning. *Cognitively*, the child advances from concrete knowledge of objects to perceptually abstract knowledge of color, size, and number and onward toward abstract analysis of thought. *Social* knowledge progresses from

undifferentiated action with objects to using objects in goal-directed actions and on to using concepts and language to refer to knowledge of mental states, as well as evaluations and interpretations. *Semiotically*, words that were once experienced as only part of an event and used in motoric imitation to represent the whole event, are emerging as labels for the concepts (Nelson, 1996). These words attached to concepts pave the way into acquisition of the culture's grammar and the emergence of linguistic representational ability (Nelson, 1996). *Sensory motor* activity of the vocal mechanism began as nonreferential and is modified into a meaningful phonological system to coordinate speech production. As development proceeds along the Situational, Discourse, and Semantic continua, it becomes impossible to discuss development within one knowledge domain without discussing development in the others.

Practical Importance of the Theories

Understanding early representational intelligence with more clarity and continuity might be expanded by research embedded within the SDS model and informed by experiential theory. Although fully understanding the processes of development is not possible even within these theories, a clearer picture is emerging². Theoretical approaches that acknowledge both the individuality of development and a common continuum of socio-cognitive processes by which development occurs might yield results for more effectively informing intervention and instructional practice. Through increased awareness of an individual child's developing representational ability, educators could plan more appropriate learning strategies and experiences for children. Additionally,

research embedded within this theoretical base requires that the researcher step outside the adult perspective on event experience so that a child's perspective can be realized, a necessity for understanding child minds and learning. Research grounded in this theoretical base could also yield findings having practical implications for addressing low literacy achievement, a problem of great current concern as low literacy severely limits individual access to social and economic power where literate and capitalistic cultures dominate³.

This study examined the content and form of preschool-age children's verbal and nonverbal behaviors that were collected from performances in representational tasks presented across a continuum of displacement conditions. Additionally, the study examined the correlation between the content and form of the language expressed in these performances and caretaker reports of direct and indirect literacy experiences in the home. The situational levels of the SDS model were used to establish predictions regarding the relative representational difficulty of each of the conditions.

Endnotes

¹ Norris and Hoffman use the terms applied by Britton (1970,1982) and Applebee (1978) for these discourse modes. In their work, paradigmatic discourse organization is referred to as the Transactional mode and narrative discourse organization is referred to as the Poetic mode. The Expressive mode, which moves across the Transactional and Poetic modes, is a term also utilized by Britton and Applebee.

² Norris and Hoffman (in press) have recognized the potential of connectionist theory to begin to explain the mechanisms, at the cellular level, that result in the development of representational thought and language.

³ Nelson points out that her work is “based primarily on research with middle-class children in Western industrialized societies” (Nelson, 1996, p. 359). This does not limit the generalizability of Nelson’s work, which allows one to see how different adult-child interactional patterns, originating from cultural practices or from congenital/acquired neurological abnormalities, results in different development.

REVIEW OF RELATED LITERATURE

Developmental differences have been found in a variety of preschool-age children's representational abilities such as being able to successfully tell a story or to clearly explain a routine event. Procedures for assessing preschool language development commonly include the analysis of language samples elicited in one of more communicative tasks. The language is examined for its developmental characteristics, including the content, or what is told, and the form, or underlying structure of the representation. However, in a model such as the SDS (Norris & Hoffman, 1993, 1997, in press) different communicative tasks can be viewed as systematically existing along a continuum of increasing representational displacement rather than as merely different tasks. Performance along this continuum of communicative abilities can serve as indicators of the child's underlying representational development.

Development along the representational continuum is manifested in the child's increased use of decontextualized language or the literate-language style required for successful communication and function within literate cultures. In other words, the level at which a child can express routine and story-related information can indicate the level at which conceptual knowledge can be processed (Semantic continuum), and the organizational structures a child has acquired (Discourse continuum), as well as the degree of representational displacement at which the information can be demonstrated (Situational continuum). This chapter will review the literature related to displacement in

thought and language and state specific questions for further investigating representational levels of displacement in preschool-age children.

Displacement and Piaget's Stages

Piaget (1936/1952, 1937/1954, 1945/1962, 1955) conducted studies through careful observations of his own three infant children and through clinical interviews where children and adolescents were provided with tasks while also being engaged in conversation related to the tasks. He studied a range of child abilities across age groups and found patterns or types of operational thought that changed with development. Piaget looked at development beginning from birth and identified six substages within what he termed the *sensorimotor* stage of development (0-2 years). Each substage is characterized by a common set of *operate structures* or logic abilities that direct behavior across a variety of domains such as object relations, knowledge of space and time, and causal relations as well as many others explored by Piaget in his numerous studies. To demonstrate how operate structures change with development, the domain of object relations knowledge across Piaget's stages will be traced. Although, it is important to recognize that in the later stages, knowledge of other domains is integrated and inseparable with knowledge of object relations.

Sensorimotor Stages (0-2 years)

During the sensorimotor period, the infant's motoric actions are guided by what is perceived through the senses. Through experience with the environment, the infant cognitively constructs sensorimotor schemes. As schemes expand, combine, and reconfigure the infant is increasingly able to

mentally represent knowledge about the world in more complex ways. This development is so rapid that Piaget noted six qualitatively different substages during the first two years of life.

Stage 1, Reflexive Reactions (0-1 month)

Piaget observed the infant's response to objects encountered within the environment. From these infant behaviors he concluded that during the first few months of life the infant initially had no representations or schemes and only responded to objects in a reflexive manner with no analysis or incorporation of the object into mental functions. This stage is exemplified by the infant's reflexive turning of the head toward the nursing bottle as the nipple is used to stroke the infant's cheek.

Stage 2, Primary Circular Reactions (1-4 months)

Between 1-4 months Piaget observed the infant to have basic schemes, so that when the bottle is presented by the adult and visually perceived, the infant will make anticipatory sucking movements. Toward the end of this stage visually guided reaching appears so that the infant may also extend arms in the direction of the bottle when it is perceived. Piaget concluded that the infant's representations for the bottle were organizing thought so that the bottle (an object in the environment) can be responded to before actually impacting the child's own body.

Stage 3, Secondary Circular Reactions (4-8 months)

Piaget observed that between 4 and 8 months, the infant could continue or reproduce interesting events in the environment. So when an infant notices

that hitting the bottle (in a manner that causes the contents of the bottle to move) changes a clear space to a colored space, she can repeat the gesture that caused the interesting movement. Piaget pointed out that this was not true exploration of an object but simply a newly acquired repetitive action on an object. The infant was able to attend to new aspects or details of the object rather than just responding to the whole bottle as a bodily comforting object.

Stage 4. Coordination of Secondary Circular Reactions (8-12 months)

As the infant approached one year of age Piaget found that two earlier established schemes could be coordinated to act intentionally. For example, the scheme for the bottle as a comforting object and the scheme for the blanket as a removable object that covers could be coordinated to execute the recovery of a bottle when the adult placed a blanket over it. The infant had acquired object permanence and means-end action sequences that allowed some control over objects or representations so that intentional behavior could be observed.

Stage 5. Tertiary Circular Reactions (12-18 months)

From 12 to 18 months, Piaget observed the infant actively exploring and experimenting by acting on objects in new and different ways. For example, the infant could explore how manipulating the nipple of the bottle caused it to change shape even though it always returned to its original shape, how the bottle falls to the floor when dropped from the crib, how the nipple portion can fit through the bars of the crib while the container portion cannot, or how biting the nipple does not separate it from the object as is the case with biting on other objects such as crackers or crayons. The infant at this stage had

representations for many action sequences with objects and could use them to learn about the environment.

Stage 6. Mental Combinations (18 months-2 years)

Piaget found that as the infant approached two years of age, internal symbolic representations could be used to act on the environment. For example, after transitioning from bottle to cup, a child in this substage might approach a younger child with a bottle and grasp the recognized object. Even without being hungry or thirsty, she would immediately place the nipple in her mouth. A familiar object could be used appropriately and independently of her current schemes for routines that no longer included a bottle. The child had internal representations for how a bottle is acted upon and the sight of it prompted her to enact her representations.

Preoperational Stage (2-7 years)

Around the age of two years, Piaget observed a major transition from the sensorimotor stage taking place. At this time, symbolic representational abilities rapidly increased. Changes in behavior included increased amounts of deferred imitation, symbolic play, and use of appropriate language. However, preoperational children were still not able to decenter from their own symbolic perspectives. For example, the child at this stage can play out her schemes for a bottle by allowing a miniature-size baby bottle to symbolize a life-size bottle when pretending to feed a doll. She cannot, however, mentally represent and pretend an unfamiliar event such as an adult's description of an infant child in the hospital being fed through a tube that runs from his mouth to his stomach.

Concrete Operational (7-11 years)

Piaget observed another major shift in symbolic representational ability to occur around age 7. He noted that the child at this age could think in an organized, logical way when concrete and tangible information could be directly perceived but not when information was abstract and hypothetical. So when the concrete operational child is asked to check her baby brother's diaper bag and the refrigerator for the bottle that contains more, this child can compare the contents of the bottles found in both locations and make logical decisions about which bottle has more.

Formal Operational (11-15 years)

Piaget found the last major transition in symbolic representational ability to occur at about age 11. The formal operational child had developed what Piaget called *hypothetico-deductive reasoning*. This ability enabled the adolescent to develop a general theory related to a problem and then to deduce from this theory specific hypotheses concerning the problem before systematically testing these hypotheses. Piaget also suggested that formal operational thought is *propositional* in that verbal statements can be internally evaluated for logical validity without direct experience with the phenomenon.

This stage can be demonstrated by the adolescent girl who babysat one evening in a local hotel for a relative's infant. According to Piaget, this adolescent used *hypothetico-deductive reasoning* to solve a problem while attempting to feed the hungry infant. Each time she presented the bottle to the infant's mouth, he eagerly began to suck and, shortly thereafter, began to wail.

She deduced from this problem situation that the infant found the contents of the bottle distasteful. Next, she screwed the same nipple on to a bottle of juice and got the same reaction from the infant. She tried other methods of comforting the infant and each failed. She called home and her brother proposed that the hole in the nipple was clogged, so she removed it and washed it thoroughly before replacing it. The infant still cried so she decided that the nipple was defective and had no hole so she used the point of nail scissors found in a cosmetic bag to pierce the nipple and finally the infant was comforted.

Decentering and Adaptation

For Piaget, cognitive development was marked by how the child was progressively able to better and better adapt to the environment through experiences that caused the child to actively construct mental structures or schemes. Growth of these mental structures can be viewed as increased displacement from self-experience and the present context, termed *decentering* by Piaget. This displacement allows the child to mentally select, interpret, and reorganize experience in the present with regard to others as well as to past and future events. Although Piaget viewed this construction as occurring within the individual, he believed all humans to have the same essential biological mechanisms so that these stages, although occurring at different rates, were invariant in human development.

Challenges to Piaget

Piaget's developmental sequence has been invaluable in furthering understandings of child development. His theory continues to provide the framework for many educational programs. However, numerous studies have shown that Piaget's stages are not as rigid as Piaget first proposed, with each new stage marking a new cognitive structure and thus a new way of thinking. This contradictory research has shown that the child's performance is based on context and familiarity with the situation, with types of thought demonstrated earlier or later, depending on the situational variables of the task (e.g., finding hidden objects using toy objects versus an everyday experience with real objects). Representational ability can be viewed as being governed by both maturational development and situational experience. Several studies with findings in conflict with those of Piaget are briefly described in this section.

Baillargeon conducted several studies (Baillargeon, 1987; Baillargeon & Devos, 1991) that showed evidence for object permanence in 3½- and 4½-month-old infants, an ability that Piaget believed did not appear until the Sensorimotor substage 5, *Coordination of secondary circular reactions*. Infants in one study (Baillargeon, 1987) were habituated to a square opaque screen pivoting back and forth, from its bottom edge in a 180-degree arc upon a tabletop, so that it rested in a flat position when touching the table while moving forward and backward. After habituation, a possible event was presented to the infants. A yellow box was placed behind the screen. The screen slowly moved up from the flat position on the tabletop and as it moved back it came to rest on

the box and then returned to its original position. Next, an impossible event was presented. The yellow box was again placed behind the screen and this screen was made to miraculously continue movement as if the box were not behind it. As the screen moved forward, the box was made to appear as if it were there all along and the screen miraculously moved through it. The infants were found to look longer at the impossible event as though they were surprised, indicating that they had developed object permanence. The findings in the study suggested that object permanence resulted not from invariant stage development but could actually be developed much sooner in a specific situational context.

Piaget's belief that preoperational children are egocentric with regard to their symbolic viewpoints has also been challenged. Borke (1975) altered Piaget's 3 mountain experiment which required the child to interpret a scene from the perspective of another. Piaget showed that children below the age of 6 or 7 were not able to select the picture that showed the doll's view of the 3 mountains and instead choose the photograph that depicted their own view. Borke investigated the ability of 3- and 4-year-old children to recognize how a scene containing familiar toys looked from a doll's perspective. The subject's abilities to recognize the doll's perspective was assessed by their rotation of a turntable to show the doll's view. Under these more familiar and more facilitative conditions using manipulable objects instead of static pictures, the children were quite able to ascertain which view the doll, previously positioned elsewhere, would have perceived.

A study by Anderson and Cuneo (1978) also suggested that when Piagetian tasks relating to logical operations are simplified and related to objects and events that children are familiar with, preschool-age children display cognitive capacities beyond those described by Piaget. In this study, preschool-age children were asked to rate how happy a very hungry child would be to get rectangular shaped cookies of systematically varied heights and widths. Piaget proposed that Preoperational children centered on one detail in neglect of other important dimensions. In Anderson and Cuneo's study, even 3-year-olds were able to simultaneously take into account both height and width when judging which cookies would be desired by the very hungry child and did not center on one relevant dimension to the neglect of the other.

Piaget (1928/1972) conducted clinical interviews with children about heavenly bodies, air, wind, and breath. He observed that young children made reversals of cause and effect on sentence completion tasks. Peterson and McCabe (1985) asked preschool-age children to judge causal sentences as true or silly and found their responses could be improved by using detailed and explicit task instructions and modeling the response procedures. Peterson and McCabe concluded that Piaget's findings were due largely to the situational conditions or the way in which he questioned the children.

Frank (described in Bruner, 1964, 1966) conducted an experiment in child abilities for conservation of physical quantities. She found that Piaget and Inhelder's (1962) results could be drastically altered when a mediation situation was presented. Frank's 40 subjects were equally divided in 4-, 5-, 6-, and 7-

year-old age groups. Each child was presented with 3 tasks beginning with the classic conservation task that served as the pretest for determining which children exhibited conservation and which did not. The same task was repeated except an opaque screen was also used. First, 2 standard beakers partly filled with equal amounts of water were presented. A wider and empty beaker of the same height was then presented. One standard beaker with water and the wider empty beaker were placed behind a screen so that only the tops were visible. The water in the second standard beaker was poured into the wider beaker that was hidden, except for its top, behind the screen with the first partially filled standard beaker. The child was asked which beaker had more to drink. Correct responses went from 0% to 50% for 4-year-olds, from 20% to 90% for 5-year-olds, and from 50% to 100% for 6- and 7-year-olds.

The final task did not include the screen and was similar to the pretest except for a tall thin beaker was used in place of the wider beaker. The 4-year-olds were not affected by the screening experience and reverted back to perceptual judgements saying the tall thin beaker had more. In contrast, the 5-, 6-, and 7-year-olds improved in conservation ability. The 5-year-olds went from 20% to 70% while the 6- and 7-year-olds went from 50% to 90%. The brief situational experience allowed many 5-, 6-, and 7-year-old children to become better conservers of physical quantities. Frank, interested in how this cognitive change took place, also analyzed the children's verbalizations during the tasks. She interpreted the findings in light of these child verbalizations and concluded

that the child used the strategy of an internalized verbal formula to override perceptual input.

Bruner (1964) commented on Frank's experiment as well as on several related experiments from the Center for Cognitive Studies. He suggested that children can transcend mere association as they construct rules that govern events in the environment. He went on to state that this system for processing environmental events depends upon the translation of experience into symbolic form. This system permits the child

...to deal with the nonpresent, with things that are remote in space, qualitative similarity, and time, from the present situation. ...Children, as they grow, must acquire ways of representing the recurrent regularities in their environment, and they must transcend the momentary by developing ways of linking past to present to future – representation and integration (Bruner, 1964, p. 13).

Bruner further suggested that language is the medium or system for transcending momentary or perceptual experience. Language permits productive, combinatorial operations allowing the child to represent beyond the immediate. In speculating how language is internalized, he suggests that it "depends on the interaction with others, upon the need to develop corresponding categories and transformations for communal action. It is the need for cognitive coin that can be exchanged with those on whom we depend" (1964, p.14). So, while Piaget's work has provided for major advances in understanding child development, his views on the invariance of stage progression and on the role of language in cognitive displacement have been challenged.

Displacement and Symbolic Play

Cognitive displacement has also been observed in symbolic play where children enact familiar routines and imaginative events. Symbolic play progresses from single action schemes with the self as the actor to very complex enactments using abstract props with miniature characters in primary roles. The following section discusses play studies that provide insight on the role of symbolic play in cognitive displacement.

Pellegrini (1982), in a naturalistic study with four middle-class children in a preschool setting, examined the actual language of these children when interacting with play props in order to understand the relationship between symbolic play and literate language. This study was based on Olson's (1977) concept of literacy as the notion that meaning was verbally explicated, and on Halliday's (1969) functions of language, specifically the imaginative function. Language used in the imaginative function also necessitated making meaning verbally explicit to be understood by playmates. Pellegrini (1982) looked at the use of cohesive ties and found that children did introduce play themes with verbal explicitness and that this was often done in response to playmates' needs for clarification. The roles and definitions presented in their introductions and their ensuing clarifications resulted in subsequent utterances that contained cohesive ties to the introductions. Pellegrini concluded that symbolic play facilitated the use of decontextualized language as children could only minimally rely on gestures and shared knowledge to convey meaning.

In a follow-up study, Pellegrini (1985, 1986) was interested in replicating the results of the naturalistic study in experimental conditions. Twenty middle-class four- and five-year-old children enrolled in preschool, with equal numbers of boys and girls, participated in this study. Same gender, same age dyads of children, reported by the teacher to usually play together, were escorted to the experimental playroom for two 20-minute sessions. In one session the dyad, the unit of analysis, was provided with dramatic props relating to a doctor's office and in the other they received constructive props including various wooden blocks, Styrofoam packing forms, and pipe cleaners. Transcripts of child language were coded for use of literate language or language that included cohesive ties as well as modifiers and qualifiers around pronouns and nouns. For example in the sentence, "The big chimney on my house is gonna fall" the modifier is *big* and *on my house* is a qualifier.

Results of the study supported Pellegrini's hypothesis that literate language is facilitated in pretend play settings. Interestingly, Pellegrini found that when props had less clear definition, as with the constructive props, only the older children were able to generate a complex narrative line. The construction props required that children organize thought around a narrative theme as well as displace thought to allow the props to symbolically represent objects related to the organizational theme.

Pellegrini (1998) later suggested that because social symbolic play follows a social script and because it includes the use of language and gestures that are often ambiguous in meaning, conceptual conflicts are presented.

“Resolution is likely to occur because of the motivational aspect of social symbolic play: children enjoy the activity so they do what they can to maintain it” (Pellegrini, 1998, p. 69). Pellegrini’s proposal can be interpreted from a Piagetian and Vygotskian prospective. The disequilibrium that results within the individual from the ambiguity in meaning promotes social interaction with language for resolution. This social interaction to achieve clarification and cohesion requires increasingly displaced language. As receptive and expressive language abilities become more displaced, concepts can be mentally expanded or restructured. This relationship is reciprocal, with neither displaced language nor complexity of concepts preceding, but rather each facilitating development of the other.

Westby (1980, 1991b; Patterson & Westby, 1998) pays particular attention to the relationship of symbolic play to cognitive, social, and language development as well as observing the developmental combinations of action in pretend play. She sees play assessment as a more appropriate and more informative method of evaluating preschool development than traditional assessment of knowledge domains. Play assessment provides “not only knowledge children have, but also how they use this knowledge in a real-world context” (Westby, 1991, p. 133). Westby (1980) devised her original play scale to look at play from presymbolic to symbolic levels. The scale was based on observations of normal infants, toddlers, and preschool children in childcare centers and handicapped children enrolled in preschool and elementary special education programs. Westby derived the original age levels by determining

when 80% of middle-class preschool-age children performed the play and language behaviors at each level on her scale. The scale is composed of a play and a language dimension and was used routinely by the New Mexico Developmental Disabilities Team in the assessment of 600 children per year as well as being used in other preschool and elementary special education programs throughout New Mexico.

The original two-dimensional scale resulted from normally developing children exhibiting play and language abilities at two adjacent levels. However, atypically developing children exhibited some, but not all of the behaviors at a particular level. Atypically developing children above 3 years of age often exhibited a wide scattering of skills across several levels and less complete skills at each level. Westby (1991b) later revised the scale to include dimensions within play and dimensions within language (or communicative intent for the presymbolic level) to help assess child development within each level.

The three dimensions of language are: form (syntax), function (use), and content (semantics, vocabulary). Play is considered along four dimensions: decontextualization and object substitution, thematic content, organization of themes, and self-other relationships or decentration. These dimensions of language and play typically develop concurrently and essentially correspond to the components of language in cognition outlined by Norris and Hoffman (1993, 1997, in press) and Nelson (1996) and described earlier in this work.

Westby suggested that the transition to symbolic play involves the representational ability to think with symbols. Symbolic abilities allow the child to transcend immediate reality. These abilities are manifested in the play, art, mathematics, music, and language activity of young children. Higher-level language development is characterized by the use of temporal and causal conjunctions and noun phrases elaborated by adjectives and prepositional phrases. To coordinate and subordinate events, complex semantic and syntactic structures are acquired. In play, children acquire the need to indicate temporal relations with terms such as *first*, *then*, *next*, *before*, *after*, and *when* as well as simultaneous events using *and* or *while*. Who is to perform the activities and how they are to be performed must also be made explicit.

Vygotsky (1933/1978) and his associates investigated the relationship of symbolic play to language development. In one study, they attempted to experimentally establish the advent of what Vygotsky termed "object writing"¹ or when children were first able to utilize a plaything (substitute object) and execute a representational gesture with it. Subjects were 3-, 4-, and 5-year-olds who were asked to use familiar objects to represent other objects and people in play situations. Items on a table were presented to the children as playthings. A book was designated as a house, keys as children, a pencil as the nursemaid, a pocket watch as a drugstore, a knife as a doctor, a bottle as a wolf, an inkwell cover as a carriage, and so forth. The children were then provided with a simple story relating these playthings while making figurative or symbolic gestures with the objects.

Vygotsky reported that most 3-year-olds could read these symbolic gestures with ease and that 4- and 5-year-olds could read even more complex symbolic gestures. More importantly, Vygotsky found that the perceptual similarity of the objects was not the most salient aspect for understanding symbolic notation or, from the perspective of the present study, displacing thought. The more important aspect was that the symbolic object could be manipulated in the same manner as the authentic object. The children absolutely refused to play when the experimenter took their fingers, put them on the book, and suggested they stand in as children. Vygotsky claimed that "fingers are too connected with their own bodies for them to be an object for a corresponding indicatory gesture" (1933/1978, p. 109). From Nelson's perspective, this finding indicates that the gestures with the objects (i.e., making objects used as agents perform acts or performing acts with objects) allowed the children to mimetically represent the story events.

Interestingly, Vygotsky also reported that the older children in the study selected many details in the symbolic objects to indicate the corresponding authentic objects. For example, a child suggested that the opening in the bottle was the wolf's mouth. These older children, having developed true linguistic representational ability, were increasingly able to use prior knowledge to distance thought from perception. As Norris and Hoffman (in press) suggest,

Generalized concepts form based on the perception of the object and its role within the event. These concepts refine as new input is assimilated on a "best fit" basis (Rosch, 1978). Representations are continuously recombined in new ways to accommodate new contexts of use. Prior knowledge becomes increasingly important to making interpretations regarding the meaning and function of

objects, actions, and words or other semiotic reference to specific representations (in press, p.11).

In play, abstract thinking or symbolic behavior is promoted as children come to transform and transcend reality. This transformation takes place as children are increasingly able to allow substituted objects to stand in for authentic objects and as they use symbolic actions to stand in for adult actions. Through the use of symbolic objects and gestures, symbolic play mediates the acquisition of linguistic or symbolic conventions that actually do not resemble reality in any clear way. The child must communicate to playmates how the symbolic objects and actions are being used to stand in for the authentic objects and actions. While children symbolize their developing concepts for adult actions with objects, they are simultaneously being socially propelled to manipulate words that are in themselves abstract and socially mediated symbols. The work of Vygotsky supports the view of play and language as being reciprocal in development while also serving as vehicles to displace thought.

Britton (1970) presented a theory on language and learning (described later in this work) and also saw symbolic play, or dramatic play to use his term, as a medium for decentration.

...the behavior itself results in a reduction of egocentricity: from trial of other roles the child returns less firmly enclosed in his own point of view, his own set of feeling relationships. And a dramatic situation that really takes hold in a group propels the members of it more forcibly out of their own skins into someone else's than any other form of representation can do at this early stage (Britton, 1970, p. 143).

Britton also saw the interrelationship of symbolic play and language development as socially propelling children to displace and decenter thought. His words are appropriate here as the discussion transitions to the relation of symbolic play and language to narrative development.

In narration, an event has to be verbalized if it is to feature at all: in dramatic play the situation and the actions within it are themselves represented, and the speech thus remains embedded in context. In the earliest forms of such play a child simply speaks as though the enacted situation were in fact his present one. But soon, in order to get help, or to play with other children, or merely to be sociable, he may need to call up the scene or establish the course of action (Britton, 1970, p. 141).

The ability to linguistically call up the scene and establish the course of action in symbolic play requires development in narrative organization. Heath (1982) conducted ethnographic studies in two working class communities located in the Piedmont Mountains of Appalachia. She found that children entering school with a better-developed sense of narrative also have a wider range of scripts for symbolic play. Nicolopoulou (1997a), another qualitative researcher, conducted what she termed “interpretive and sociocultural studies” and also found connections between symbolic play (although her term is fantasy play) and narrative ability. She collected narratives for a period of one school-year in a 4-year-old classroom in northern California and this research was extended through two years of collecting data in collaboration with teachers in two preschool classrooms in western Massachusetts (Nicolopoulou, Scales, & Weintraub, 1994; Nicolopoulou, 1997a). In her analysis of these narratives, she employs her understandings of Vygotsky’s (1933/1976) theory and views play as emancipating the child’s thought from the constraints of the immediate

external environment and the first steps toward organizing thought in a coherent and independent way. Nicolopoulou discusses and expands Vygotsky's characterization of play as having two essential components: (a) an imaginary situation and (b) the rules implicit in the imaginary situation. The rules actually constitute the play situation while the meanings of actions based on these rules are derived from the play situation (see figure 2.1).

Fantasy play has implicit rules or restrictions placed on children's behavior by virtue of the roles they adopt. Children must try to grasp and follow these implicit rules for the social roles of the characters they take on (e.g., mother, father, doctor, teacher), as perceived individually and negotiated, sometimes explicitly, by the playgroup. These rules or conventions are essential to the existence of the play-world and derive their force from the social enjoyment and commitment of the children to share the play-world.

Nicolopoucou's (1997b) description of symbolic play development, with its imaginary situation and implicit rules, can be seen as analogous to the simultaneous and interrelated development of language (see figure 2.1). Language development requires the use of abstract signs and displaced thought to process and communicate meanings (semantics). This phenomenon is analogous to the imaginary play situation. The acquisition of implicit rules or grammar for using those abstract signs to negotiate meaning is analogous to the rules necessary for creating the play situation. Both the abstract or arbitrary signs and the rules necessary for linguistic representation are culturally and socially shared and are transmitted to children through social interaction. The

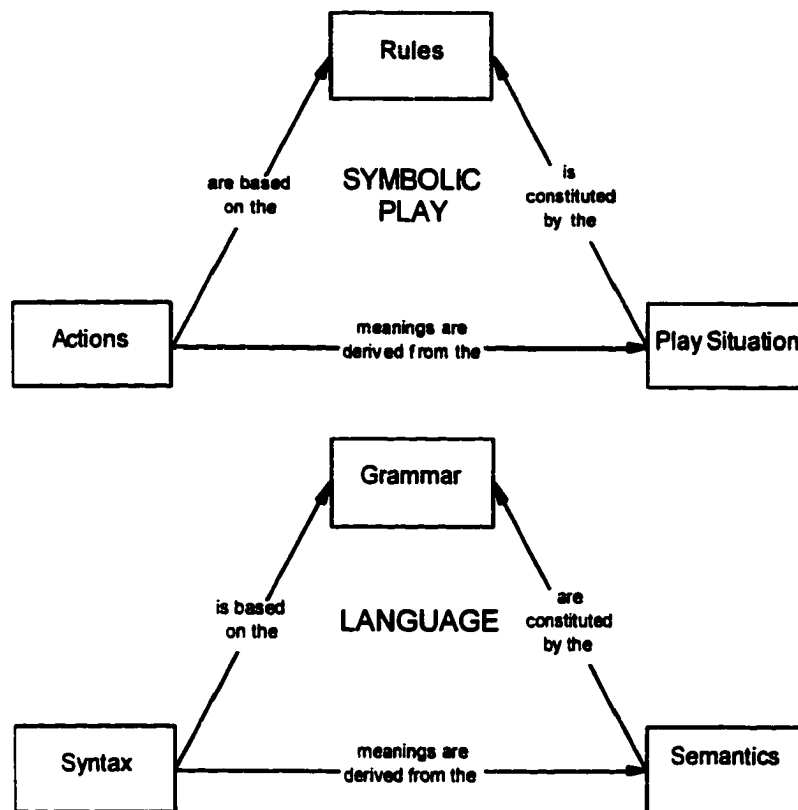


Figure 2.1
Nicolopoucou's (1997b) characterization of *play* analogized to *language*.

social situational roles and rules that children experiment with in social symbolic play are mediating and facilitating motoric productions of word combinations (syntax). All of these processes are necessary for linguistic representational ability.

While Nicolopoucou did not speak of this analogy, she does see the ability to create the play-world as a crucial cognitive move that occurs simultaneously with the development of narrative. She writes:

This involves the creation – in imagination – of a symbolic world dominated by meanings, with its own inner logic, in which action arises from ideas rather than things. In short, it is precisely by

fostering the development of symbolic imagination that play prepares the way for abstract “internalized” thought. ...the features of fantasy play...are equally characteristic of children’s activity in telling and responding to stories. ...We might say that children’s fantasy play can be seen as the enactment of narratives, in a way that is complementary to their discursive exposition in stories. In fact, the line between the two is not easy to draw in childhood (1997b, p. 198-199).

Nicolopoucou suggests that children use stories and other symbolic constructions to represent the world and these symbolic representations allow them to displace thought in time and space and help them to make sense of their world in the present. Children use the images and conceptual resources of their socio-cultural environment in constructing their stories or sense-of-the-world schemes. Nicolopoucou views children as incapable of independently constructing a conceptual world; they must appropriate the conceptual resources of the preexisting cultural world that is transmitted to them by parents, other adults, and peers. This simultaneous appropriation and transmission of cultural knowledge can be seen from the perspective of Norris and Hoffman and Nelson as resulting from the interconnections in cognitive schemes constructed through social, semiotic, and sensory-motor experience.

Displacement in Language

Moffett (1968) sought to develop a model of the communicative process that was consistent with cognitive development and useful to educators. He viewed displacement in thought as a function of language. Utilizing Piaget’s notion of decentering, he described development as occurring along two dimensions termed *referential* (i.e., displacement in time and space) and

rhetorical (i.e., awareness of self-other). Movement along these linguistic dimensions also represented cognitive growth. Moffet's model contains three components that are interrelated in the communicative process including the participants, the topic, as well as the level of discussion. Britton (1970, 1982) developed a similar theory of language as a tool for displacing thought from the here and now. Internal manipulation of thought was seen as uniquely possible through the acquisition of language. He suggested that language allows for the transformation of events from the canonical order to a new order for communicative purposes such as to entertain, to inform, or to convince. These theoretical perspectives have influenced studies related to displacement in language.

The Perceptual – Language Match Hierarchy

Blank, Rose, and Berlin (1978a) adapted Moffett's (1968) model for teaching and learning with older students and conducted a study to determine whether preschool-age children possessed the language skills needed for engaging in productive verbal exchange with teachers and to what extent these skills were associated with social class background. The sample included 288 children between 36 and 71 months from lower and middle SES families. Blank *et al* developed a test to assess communicative skills necessary for the process of learning. They organized learning on a scale termed the *Perceptual – Language Match Hierarchy*. This organizational format was designed to assist the adult in providing the most appropriate contextualization so that the preschool child could receive the most benefit from learning activities.

The test questions progressed along a continuum of abstraction but were still bound by the perceptual situation. At the lowest level is *Matching Perception* where the child is asked to report and respond to salient information or materials in the immediate environment (e.g., What do you see by the table?). A higher level of interaction with the child is *Selective Analysis of Perception*. At this level the child is asked to report or respond to delineated and less salient cues in the material or environment (e.g., What color is the chair?). *Reordering Perception* is a more cognitively demanding level as the child is asked to use language to restructure perceptual input and inhibit predisposing responses (e.g., Show me some furniture that is not a chair). The highest preschool level of interaction is *Reasoning about Perception* or using language to predict, reflect on, and integrate ideas and relationships (e.g., What will happen at snack time when we have more children than we have chairs?). From the normative data on this instrument², children were found to increase in their ability to perceive and refer to information as they develop in age. Children were also found to differ in age for mastery over the four levels and in quality of response according to socio-cultural group. These findings indicate that individual children could be expected to perform differently on tasks that differed in both perceptual and linguistic difficulty.

Language and Thought Interaction Study

Weist, Lyytinen, Wysocka, and Atanassova (1997) investigated the relationship between conceptual development and language acquisition within the domain of spatial and temporal location. Subjects included 80 American, 48

Finnish, and 48 Polish children from 2 to 5 years of age. Spatial and temporal conceptual tasks were used to measure changes in child abilities during the preschool period. Linguistic comprehension and production tasks were used to evaluate children's understandings for mono-referential and bi-referential locations in time and space. Mono-referential location involved a single referent object or event with intrinsic properties such as *in* and *on* or *past* and *not past*. A bi-referential location required two or more referent objects or events and relative perspective such as deitic (i.e., pointing out) *front* and *back* or *before* and *after*.

Weist *et al* reviewed previous research on conceptual development in the temporal domain and presented studies that tied this conceptual development to language. In reviewing studies of narrative development, they interpreted the "structural development in narrative as reflecting the process of temporal decentration during the preschool period" (1997, p.85). They proposed that spatial and temporal linguistic systems and representational knowledge interact during development. The findings of the study showed "that measures of temporal and spatial decentration consistently covaried with measures of linguistic bi-referential location" (Weist *et al*, 1997, p. 115) with mono-referential location being easiest for children across cultures.

Weist *et al* also state, "while it does not prove it, the finding is consistent with the hypothesis that coordinated representational structures provide the conceptual platform for the expression of complex locative relations involving two or more referent objects/events" (1997, p. 112). At the same time, this work

also offers support for an alternative hypothesis that language is the medium for displacing thought. It is interesting that they did not consider how language influenced performances on the conceptual tasks. These tasks relating to time and space were not and could not be developed in a way that eliminated any linguistic comprehension or production on the part of the examiner or child subject.

As Nelson explained when writing about temporal concept development, it is only through the representational function of language that the child can acquire the cognitive capacities to conceptualize temporal relationships. To represent the past or future requires the acquisition of grammar and entrance into linguistic representational ability. Nelson further explains when writing about memory that it is for this same reason that infantile amnesia exists; children cannot construct memories of past experience without linguistic representations.

Narrative Development and the Literate-Language Style

Bruner and Feldman (1996) suggest that narrative modes are modes of knowing and therefore mastery of narrative models becomes a central task in cognitive development. Narratives are a form of decontextualized speech and decontextualized speech is a characteristic of the literate-language style. Different cultures or even subcultures generate different narrative configurations or modes of knowing about the world and these differences as well as social class differences affect children's narrative development.

Westby (1980) in her development of a scale for assessing children's play, claimed that school achievement was dependent upon the acquisition of narrative abilities in the literate-language style as opposed to an oral-language style. Literate-language abilities allow children to participate in activities that are conceptually displaced in time, space, and perspective or activities that are increasingly language dependent. In these displaced activities, neither enactment nor reference to concrete objects in the environment is available except through words. Westby (1986/1991) examined ethnographic studies reporting differences in language use and acquisition across and within cultural groups and social classes. The research showed that not all cultures use language and literacy for the same purposes, nor do they structure language interactions with children in the same way. She writes:

Those cultures that can use decontextualized language (i.e., communicative use that is not dependent upon the immediate environment for the speaker and listener) or a language that is used for reflecting, reasoning, and planning exhibit greater ease in acquiring and using literacy than do cultures that rely almost exclusively on a here and now use of language. The messages of written text rarely refer to the immediate here and now (Westby, 1991, p. 335).

These cultural differences in communicative styles were found to exist along an oral-literate continuum and were manifested in terms of function, topic, and structure.

Oral language functions more to regulate social interactions, to request and command, to communicate with small groups, and to communicate concrete and practical understandings. In contrast, literate language functions

to regulate thoughts and plans, to reflect upon or to seek information, to learn or teach, to communicate with large audiences, and to build abstract theories of reality. Topics in oral discourse are familiar objects and situations, often based in the present time and place where meaning is tied to the context and the discourse organization is topic-associative. Topics in literate discourse are abstract or novel situations, removed from the present with meaning inferred and conclusions drawn from the text, and is topic-centered in organization. The structure in the oral-language style uses repetitive syntax; familiar words to express ideas; many pronouns, slang, and jargon; and cohesion is based on intonation. A literate-language style employs a diverse but specific vocabulary, concise syntax to express ideas, and formal linguistic markers for cohesion (e.g., because, although, since, therefore). In short, the oral-language style employs more contextualized language where the literate-language style employs more decontextualized language. All cultural groups and social classes use both language styles; however, the degree to which one or the other is emphasized varies greatly across these cultural groups and social classes.

McCabe and Peterson (1991) conducted a longitudinal study of parental styles in eliciting narratives and in developing narrative skill in their children. This study showed differences in the use of decontextualized language within a middle-class sample population. In this study, a Vygotskian social interactionist account of the development of personal narratives was proposed and tested. It was hypothesized that children develop personal narratives in anticipation of habitual parental interaction. Ten white middle-class Canadian children and

their mothers, all of whom had attended college, participated. Girls and boys were equally represented and were from 25 to 27 months at the outset of the study.

Parents were supplied with tape recorders and were asked to record, in as natural a way as possible, home occasions when their child liked to tell them narratives or "stories about personal experience, about real events that happened in the past." Two tapes from each parent were analyzed and results submitted to statistical analysis: one when the children were 27 months of age and another when they were 31 months of age. Parental input was analyzed and scored for the number of closed- versus open-ended questions posed either initiating or extending the topic of conversation, repetitions of what the child said, statements introducing versus extending the conversations, number of clarifying questions, and number of times parents simply showed verbal attention. These scores were later correlated with child narratives produced at 42 months.

An examiner visited the children in their homes when they reached 42 months of age. The examiner prompted them for narratives in interviews in a procedure that first involved a drawing task to minimize self-consciousness. The experimenter talked casually during the child's drawing activity, about her own experience such as a personal accident that caused her to need the present Band-Aid on her finger. The experimenter then asked the child, "Has anything like that ever happened to you?" The child's three longest narratives were

assessed and scored for overall complexity. Story complexity was correlated with the parent elicitation scores from the two earlier recordings.

Results indicated that all parents engaged in topic-extension during narrative conversations to their young children, although some parents engaged in considerably more topic-extension than did others. The topic-extensions of the parents proved to be predictive of longer child narratives over time. Topic switching was associated with later emerging narratives that were shorter in length. McCabe and Peterson (1991) concluded that the ability of 3½-year-olds to produce extended personal narratives to an interested but relatively uninvolved listener reflected the level of earlier interpersonal process in which some parents extended their children's narratives "by means of statements and specific questions relevant to what is being discussed rather than proposing a series of topics in the hopes that one will catch a young child's fancy" (McCabe & Peterson, 1991, p.250). These results support Westby's (1986/1991) suggestion that child talk that is conceptually displaced in time, space, and perspective (or activities that are increasingly language dependent) is mediated and facilitated by caretaker interactions. Westby observed that parent interaction patterns are influenced by cultural and social background and have variation within cultural and social groups. McCabe and Peterson's (1991) study involved middle-class mothers who had attended college and found varying amounts and types of interaction with children occurred even within one socio-economic group.

McCabe (1997) later summarized her research on parent-child interactive language or what she termed parent interviewing styles. She stated that substantial evidence existed for the parental role in play as critical in shaping many aspects of their children's narrative skills.

Parents who talked very little to their children about past experiences with their children from the age of 2 to 3.5 years have children who talk very little at all about such personal experiences with others. On the other hand, parents who talk at great length about such events have children who later tell elaborate, well-developed personal narratives. ...Parental emphasis on specific components also predates children's emphasis on these in personal narratives. That is, to the extent that parents emphasize plot, orientation, causality, or reported speech, so do their children later on. Correlations between parental input and subsequent child performances were overwhelmingly more frequent in all these investigations than were concurrent correlations of parent and child behavior or correlations of child behavior with subsequent parent performance (McCabe, 1997, p. 159).

McCabe's work suggests that preschool children having greater experience with caretaker talk about the past and greater caretaker emphasis on narrative components are more likely to cohesively represent displaced experience (as exhibited by use of the literate-language style in their narratives) better than children having few of these same experiences.

Content and Form

A way of measuring language ability relative to displaced thought and narrative construction is by looking at the content and form of the language used at particular levels of displacement and organization. This is appropriate considering that the content and form of language samples have been shown to depend on context. Masterson and Kamhi, (1991) investigated the systematic manipulation of context as a measure of language processing demand. They

were interested in the effects of available contextual support, discourse genre, and listener's knowledge of the topic on dependent measures of syntactic complexity, grammatical accuracy, phonemic accuracy, and fluency in language-learning disabled, reading-disabled, and normal primary-age children. Each of these groups was composed of a sample of 10 children with a total of 30 subjects.

Manipulation of context first involved presenting subjects with three experiment situations, each designed to elicit two forms of discourse: descriptions and explanations. The subjects were first asked to describe the objects they saw in the contextualized situation. Next, the examiner used the objects to conduct an experiment. The child was then asked to describe and explain what had happened in what was then a decontextualized situation. To examine effects of listener knowledge, the subject was asked to explain the experiment to a confederate child who was not present while the examiner conducted the experiment.

The second manipulation of context involved the use of a story retelling procedure. The subjects were presented with four sets of picture story cards. The examiner modeled two stories, corresponding to two sets of story cards that were approximately 160 words in length and contained humorous episodes involving a boy and his dog. Subjects were allowed to refer to the cards to retell one story, however, the other required retelling independent from use of the story cards. The third and fourth story sequences were told to the child and retellings were directed to a confederate child. The examiner allowed the use of

story cards in the retelling of the third story but not in the retelling of the fourth story. The contextualized and decontextualized retelling tasks were counterbalanced in presentation.

Results indicated that clause structure complexity, fluency, and grammatical and phonemic accuracy tended to be highest when children were discussing absent referents, providing explanations or recounting stories, providing unshared information, or discussing stories in a decontextualized format. When the situational context included a decreased amount of shared information between the speaker and listener, the speaker was required to adopt a literate-language style. In conditions that provided contextual support, the speaker and listener had access to the same information since the listener could see the same items being discussed or the same pictures that depicted these actions with objects. In these contextualized conditions, the speaker realized that less descriptive information and less explicitness of relationships were needed in order to be understood.

Liles (1985) suggested similar influences of decontextualized and contextualized conditions to explain the situational variation in the use of cohesive devices. Twenty normal and 20 language-disordered children, ages 7-10 years, produced two narratives, one for an adult listener who saw a movie with a child and one for an adult listener who had not. Both groups altered their use of cohesion as a function of the listener's needs in the same way. However, normal subjects and language-disordered subjects differed in their manner of

cohesive organization, their cohesive adequacy, and their comprehension of the story.

Schneider (1996) investigated the effects of elicitation contexts on retellings of children ages 5 - 9 years. Stories were presented in three conditions: pictures only, oral story only, and pictures with oral story. Measures of length, content, and discourse in retellings were highest when children listened to stories without pictures indicating that the presence of pictures or shared information caused the child to make less information verbally explicit. In agreement with these findings, Hughes, McGillivray, and Schmidek (1997), in their *Guide to Narrative Language: Procedures for Assessment* suggest that child performances in tasks having contexts where information is shared are less likely to contain the kinds of referent specificity required for contexts where information is unshared or decontextualized contexts.

Link (1995) examined language samples of first, second, and third grade Caucasian children enrolled in public schools in a metropolitan school district. Three groups of 10 - 11 subjects at each grade level were formed. The three groups included children classified as high achievers in reading, children classified as low achievers in reading, and children classified as learning disabled. Language samples were individually elicited from each child in three tasks. The tasks included verbalizing a daily routine, telling a story related to a set of seven pictures, and explaining the rules of a baseball or another team sport with which the child was familiar. Transcripts of language obtained on these tasks were segmented into T-units and analyzed for semantic function, as

well as grammatical and semantic accuracy. Results of the study indicated that performances on tasks differed in predictable patterns. Tasks representing lower levels on Norris and Hoffman's (1993) SDS model were easier for children and differed reliably from tasks at higher levels. Scores generally increased across tasks within and between ability groups and by grade levels indicating that the context for eliciting language samples does result in differences in performance.

Scott (1997) was interested in the effects of manipulating situational context on linguistic complexity for children who stutter as compared to children with specific language impairment and children with normally developing communication skills. Her study included children between ages approximately 8-12 years of age enrolled in public elementary schools in a metropolitan school system. Scott selected three groups of 12 subjects each to be representative of the populations in her study. Children who stutter were matched on age and gender with children in both of the other groups. Experimental situational tasks were counterbalanced in presentations to subjects and represented Levels III, IV, V, VI, and VII of the Situational continuum from Norris and Hoffman's SDS model (1993). Language samples were analyzed for fluency, discourse level, and presence of story grammar elements. Results indicated that contextualization is an aspect of language formulation demand that influences both fluency and linguistic complexity. There was a significant reduction in frequency of stuttering in the SDS Level III (Contextualized Relational) task for the group of children who stutter. For all three groups, tasks at SDS Levels VI

and VII, the two decontextualized conditions, produced greater frequencies of normal-type disfluencies and maze behavior, as well as reduced discourse complexity, episode completion, and semantic complexity.

These studies suggest that the elicitation context does influence linguistic production in assessment tasks. If the individual is more less able to represent information at higher levels of decontextualization or is unfamiliar with the topic specified by the task, less content and less complexity in form would be provided. However, if the individual is more capable of representing information at more decontextualized levels, performances at higher levels of displacement would be expected to make content more explicit by use of more complexity in form than performances given at lower levels. Considering the effects of elicitation contexts on task performances, a procedure to best compare child performances across tasks, within groups, and between groups, necessitates that tasks be presented along a continuum of displacement while at the same time being based on a routine with which children have equal amounts of experience and familiarity.

Naremore (1997), while not directly addressing displacement, did suggest a useful format that could be adapted for comparing performances across displacement tasks. She was interested in assessing child abilities to use script frames and story frames from long-term memory to help organize narratives. However, from the perspective of Norris and Hoffman and Nelson, development in displacement ability and processing of meaning are simultaneous with organizational development. So it is not surprising to find

Naremore's tasks, designed for looking at organizational frameworks, to also be useful for investigating representational levels of displacement. Naremore described tasks from enacting a script for the bedtime routine to composing a story based on the bedtime routine. These tasks were utilized by Naremore to assess the child's ability to use script frames and story frames or to assess their organizational ability. This assessment includes analyses of both the content and form of the language used in each communicative task performance. Naremore suggests that combining a script for a daily routine and a story framework results in "a powerful organizing tool for a child" (1997, p.18) and pointed out that many stories for very young children and many early reading materials are based on deviations from typical scripts for young children.

The story frame includes story grammar elements that are necessitated by a deviation from the routine or the script frame. Naremore sees the activation of these frameworks as dependent upon the child's comprehension of the task. By imposing the SDS model on Naremore's tasks, the developmental perspective can be broadened. The tasks essentially fit four of the ten levels on the Situational continuum. Comprehension of the tasks, within this model, now also depends on the child's ability to displace thought from the here and now context (Situational continuum) and to process meanings communicated in language (Semantic continuum).

Additionally, the content and form of language samples elicited from tasks at each displacement level could be analyzed to discern the level at which information related to a familiar routine could be organized and processed. An

adaptation of Naremore's assessment procedure to fit appropriate Situational continuum levels for preschool-age children would need to include additional tasks. This adaptation could then add coherence and consistency to observations and analyses as well as adding explanatory power. Basing each task on the child's familiar bedtime routine, as Naremore suggests, should produce the best possible individual samples within a socially or culturally diverse population, as all children have the same amount of experience in going to bed at night. Although some children may have more variation in experience, it is the one routine that has the most frequency and possibly the least variation when compared to the morning dressing and eating routine³ or other common routines such as going to the grocery store, a birthday party, or eating at McDonalds. The adaptation and extension of these tasks to fit the SDS model at the appropriate levels for preschool-age children, is presented in Table 2.1.

Summary

Previous research supports a model of language and cognitive development as dependent upon progression along a continuum from lower to higher levels of representational displacement. Language is the medium for both individually displacing thought and for transferring and appropriating cultural ways of knowing and organizing the world. The ability to decontextualize thought from the present time and space and to decenter from the self has been associated with a literate-language style, which in turn has been related to later acquisition of literacy (Bruner, 1986; Miller, 1990; Snow & Dickinson, 1990; Snow & Tabors, 1993; Crais & Lorch, 1994; Reese, 1995).

Table 2.1
Representational Tasks across Levels of Displacement

Task	Situational Continuum Level	Task Description
1. High Support Enactment	III. Contextualized Relational	This task is designed to assess the child's ability to represent the canonical event through re-enactment of self-experience in the context of preparing for bed using real props.
2. Picture Sequencing	IV. Contextualized Symbolic	The child's nonverbal ability to symbolically represent pictured acts from the bedtime routine is assessed in this task.
3. Low Support Enactment	V: Contextualized Logical	This task is designed to assess performance when only minimal props are available in miniature form (e.g., doll having same gender & race as child, doll-size blanket, and a miniature bar of soap) and verbal symbolic ability is required to create the context for explaining the bedtime routine.
4. Verbal Account	VI. Decontextualized Egocentered	The ability to represent the entire bedtime routine symbolically through language is assessed in this task.
5. Story Retelling	VII. Decontextualized Decentered	The story presented in this task although a deviation from the typical bedtime routine, is not the child's own experience, but was originally encountered as a contextualized, visual experience. The child is required to recall events independently of the storybook context using knowledge of story grammar or narrative structure to help recall and retell the story.
6. Group Rules for Routine	VIII: Decontextualized Relational	In this task the child's ability to relate knowledge of an individual routine with a deviation condition requiring a group routine is assessed. The task requires that rules for the group routine be generated for familiar people in a familiar setting. A storm situation is presented where children had to spend the night at school and group rules had to be devised to insure all did the same things to get ready for bed. Differences in the how lunch is eaten at school (e.g., lineup, take turns to wash hands, dry, sit at same table, eat, wait for teacher to say "get-up", take turns emptying trays, line up, and walk back to classroom) and at home are explained. The child is then asked how the group's preparation for bed at school would be different from self-preparation at home.
7. Story Generation	IX. Decontextualized Symbolic	In this task the child is provided with a story starter for generating a story based on a deviation from the bedtime routine. This task requires knowledge of story grammar elements and the ability to represent these elements symbolically or linguistically.

Appropriation of the literate-language style is dependent upon socio-cultural influences. The preschool-age child's interactions in social contexts with adults and children, where increasingly displaced language is encouraged, allows for the construction of representations that facilitate the use of literate-language or language that requires content to be made verbally explicit through increased completeness and complexity of linguistic form.

As language related to the child's experience becomes more displaced through both individual construction and social interaction, thought in a reciprocal way also is displaced from the present time and space. With this acquisition of increasingly displaced language and thought comes the ability for increased symbolic representation for organizing concepts and thoughts into abstract hierarchical categories and into narratives of hypothetical and unfamiliar events. The literature reviewed here suggests that language serves as a tool for organizing and displacing thought while concurrently mapping on to concepts or representations as they form. An investigation to look at children's perception or representational ability through analyses of language samples obtained in displacement task performances, as well as looking at their enactments on lower level tasks, can provide insights into which cognitive tasks children find easy versus which they find more difficult.

Therefore, the child's representations for a familiar routine, collaboratively constructed with the caretaker, will be assessed through the analysis of the content and form of language elicited in displacement tasks. It is predicted that children, when presented with representational tasks across

levels of displacement, will earn higher language content and form scores on the lower level displacement task performances (i.e., contextualized enactment) than on tasks presented at higher levels of displacement (i.e., decontextualized narrative). However, these scores should also be influenced by the requirement that tasks at increasingly higher levels of displacement require increasingly greater amounts of decontextualized language. Therefore, the child's ability to displace representations for a familiar routine from the present context, to process meanings encoded in the examiner's presentation of the task, and to organize thoughts at higher levels of complexity should all influence the use of decontextualized language as reflected in the content and form score.

Research Questions

While all caretakers of young children are generally seen as providing experience with the literate-language style, caretaker interactions with preschool-age children provide differing amounts and types of this experience. Storybook reading and other print-related activities such as recognition of name, numbers, or the alphabet, can be viewed as direct literacy experiences. Caretakers' interactive talk, relating past or future experience to the present, talk related to the experience of others, and talk about how objects and events are socially organized can be seen as providing indirect literacy experience. Both types of literacy experience have been found to support school-based literacy development, which is dependent upon acquisition of the literate-language style. Development of literate language enables thought to become increasingly displaced from the present context. Representational tasks

organized along the SDS model's Situational continuum and based on a familiar routine can provide the coherence and consistency to gain explanatory power relative to differences in preschool-age children's abilities to represent knowledge.

Home literacy experience, or the type and amount of linguistic mediation provided by caretakers in child experiences, has previously been correlated with level of literate-language ability and school-based literacy. However, home literacy experience should also correlate with representational levels of displacement. In this study, children having greater amounts of direct and indirect literacy experience in the home were predicted to perform better on representational tasks requiring higher levels of displacement. Performances were measured through analyses of language for content and form. These representational conditions ranged from enactment with authentic objects in a highly familiar routine (i.e., contextualized) to unfamiliar or hypothetical contexts for narratives (i.e., decontextualized). The levels of the Situational-Discourse-Semantic (SDS) model (Norris & Hoffman, 1993, 1997, in press) were used to establish predictions regarding the relative representational difficulty of each of the conditions. The specific questions addressed by this study are:

1. Does the level of representational displacement of tasks affect the performance of prekindergarten children for content (i.e., information consistent with event structures and story structures) and verbal form (i.e., MLU, syntactic completeness and complexity) consistent with predictions of the Situational-Discourse-Semantic (SDS) model?

2. What is the relationship between the level of representational displacement of tasks and the performances of four-year-old children who differ in literacy experience for content (i.e., information consistent with event structures and story structures) and verbal form (i.e., MLU, syntactic completeness, and complexity)?

Endnotes

¹ Vygotsky explicitly related symbolic representation in play to written language ability. He writes, "...symbolic representation in play is essentially a particular form of speech at an earlier stage, one which leads directly to written language" (1978, p. 111).

² From this study, Blank *et al* developed a test instrument titled the *Preschool Language Assessment Instrument* (1978b).

³ The morning dressing and eating routine has more variability for many lower socio-economic children as they are eligible to participate in free breakfast programs on school days and eat breakfast at home on weekends.

METHODS

This study examined the performances of four-year-old children on representational tasks across levels of displacement. The tasks required subjects to represent knowledge of the bedtime routine, ranging from personal enactments with props through generation of stories and event scripts for hypothetical situations. All children were enrolled in the four preschool programs housed within a small city's three elementary schools. The small city is located in a southern parish in rural Louisiana. Performances were analyzed for content in terms of event structure or story structure and for completeness and complexity of linguistic form. The investigation was conducted to determine if the view of representational abilities as existing along a developmental continuum could be supported. These measures of content and form, derived from the representational task performances of the subjects, were also correlated with both direct and indirect literacy experiences prevalent in the home, as determined by scores derived from responses to a parent questionnaire. These measures were used to address the two questions of this study:

- 1. Does the level of representational displacement of tasks affect the performance of prekindergarten children for content (i.e., information consistent with event structures and story structures) and verbal form (i.e., MLU, syntactic completeness and complexity) consistent with predictions of the Situational-Discourse-Semantic (SDS) model?**

2. What is the relationship between the level of representational displacement of tasks and the performances of four-year-old children who differ in literacy experience for content (i.e., information consistent with event structures and story structures) and verbal form (i.e., MLU, syntactic completeness, and complexity)?

Subjects

The subjects of the study included 32 four-year-old children enrolled in four separate educational programs located within elementary schools in the same small city (population 5600), the parish seat in a southern rural river parish of Louisiana. Subjects were selected from the total population of four-year-old children attending all three elementary schools located in the small city. All three elementary schools had prekindergarten (pre-K) programs for a total of five classrooms. One elementary school, the public school, also housed three Head Start classrooms that were part of the national Head Start program. These Head Start classrooms were not administered by the public elementary school administrators. Four children were selected from each of the eight classrooms and represented an equal number of male and female subjects. Subjects also represented, by nature of the population of four-year-olds enrolled in the separate programs, an equal number of children from low SES homes and middle SES homes. Children from middle SES families attended the private or parochial school and all were Caucasian. Parents of these children were responsible for monthly tuition and lunch costs. Children from low SES families

attended either the Head Start or Model Early Childhood programs offering free educational and lunch programs to children from low-income families.

Head Start

In this small city there are three Head Start classrooms located within the city's only public elementary school. The classrooms are comprised of all African American children and teachers with one teaching assistant being Caucasian. The parish's public school system provides the parish Head Start program with classrooms free of charge although the Head Start program is not administered by the public school system. A parish wide community agency administers the program at four separate sites throughout the parish including the one located in this city.

All children in the Head Start classrooms from which the subjects were selected are African American and all qualify for free school lunch, indicating a family income in the low SES stratum. The teachers in the Head Start programs are required to work toward earning a Child Development Associate (CDA) title and teacher assistants are also encouraged to acquire this title. CDA titles are granted through the National Network for Child Care (NNCC). Applicants complete one-year preparation programs through independent study directed by the Head Start Curriculum coordinator. After completing the independent study and constructing a teaching portfolio, a representative of NNCC makes an on-site visit to observe the applicant in the classroom. The applicant also takes a written and oral examination at this time. If the established standards are met on each assessment, the CDA title is granted to the applicant.

The director of the Head Start center located within this elementary school is a 42-year-old, African American female who has been a Head Start employee for the past 14 years. She began her career as a janitor and progressively moved to the positions of van driver, teacher assistant, and teacher before being named the center director. All three teachers in this Head Start center are African American females and two have received CDA titles while the other is presently completing the requirements. All three teachers have attended college and two have earned college degrees, one in marketing and the other in education, although this teacher has not yet acquired state certification. The three are 33, 34, and 36 years of age and have respectively 6, 6, and 8 years experience. One assistant teacher is 28 years old, an African American female, and has two years of college and 5 years of experience in the Head Start program. Both of the other two assistants are females and high school graduates with one being African American and the other being the only Caucasian staff member in the center. She is 40 years old, and has five years experience as a teaching assistant. The other assistant is 29 years old and has two years of experience in the Head Start program.

The curriculum in these Head Start classrooms is prescribed by the *Louisiana Head Start Curriculum Guide* (Andrews, 1991). This guide follows developmentally appropriate practice as outlined at the time by the National Association of Educators of Young Children (Bredekamp, 1987) and suggests programs with theme based curricula. Teachers from eight Head Start classrooms throughout the parish meet with the parish Head Start curriculum

coordinator prior to the opening of the new school year to jointly decide on monthly teaching themes. Teachers then plan activities using resources from a variety of early childhood publications selected by the curriculum coordinator. Morning activities include going to the cafeteria for breakfast, brushing teeth, and singing. No calendar activities or weather charting was observed in the three classrooms. Teachers provide daily story reading experiences although all three teachers stated that the daily story does not necessarily relate to the theme. All three teachers used the school library as their primary source of storybooks and each had a small collection of these library books in the classroom. The teachers reportedly work with the children in small groups on letter and name recognition as well as practice in writing rows of letters and child names. Classrooms are organized into activity centers such as a sand and water center, a building center, a computer center, and a housekeeping center. Tables are used for an art center and a writing center. Most center areas were labeled and chairs and cubbies were labeled with child names. Songs, poems, or other writing in large print were not displayed.

Model Early Childhood Program

Also within this city's same public elementary school, there is a state funded Model Early Childhood program. The Supervisor of Elementary Education, located in the parish public school board office, administers this pre-K program, although bus transportation, free lunch applications, and immunization records for children in this program are the responsibility of this local elementary school having a population of 640 children in grades pre-K

through sixth. All of the children in the Model Early Childhood classroom from which the subjects were selected are African American and all qualify for free school lunch, indicating a family income in the low SES stratum.

The teacher in the Model Early Childhood classroom has a master's degree in early childhood education, is a Caucasian female, and is 46 years of age. The teacher was teaching in a pre-K class for the first time, although she had 24 years prior experience as a kindergarten teacher in public schools. The paraprofessional assistant has a high school diploma and met the specified standards on an employment-screening instrument administered by the parish personnel director before being considered for the position. She is an African American female, has 15 years experience as a paraprofessional assistant in the pre-K classroom, and is 51 years of age.

The suggested curriculum in the Model Early Childhood program is a published program termed *The Creative Curriculum* (Dodge & Colker, 1996). The teacher refers to this publication from time to time, yet feels her primary resources are her extensive personal files collected from a variety of sources over her teaching career. The classroom environment includes much print including many big books, regular size storybooks relating to the current theme, class-made big books and songs and poems on charts. The teacher has a large personal collection of storybooks. Also observable in the classroom were birthday cake scatter graphs and large check-in cards with student names. Morning routines include updating the calendar and charting the weather. The daily schedule is posted with picture clues and the teacher directs the children

to attend to the chart as the children move through the daily routine. Centers, including a computer center, have labels and are well-defined areas of the classroom.

Private School

In this city there are two pre-K classrooms housed in a private school. This private school has a totally Caucasian faculty, staff, and pre-K through 12th grade student population. The school principal primarily administers the junior high and high school programs and the elementary coordinator administers pre-K through fifth grade programs. The coordinator is a former teacher and administers 14 classrooms plus a physical education and computer program.

One pre-K classroom enrolls 17 children and the other enrolls 16 children. All families must make a one-time stock purchase at a cost of \$400 and pay tuition of \$150 per month for their children to attend the school. Children may bring their lunch or purchase lunch at the school. The SES background ranges from low middle- to high-income families, including parents with professional occupations, families with farm and oil income, and parents with technical or factory occupations.

The two teachers in the Pre-K classrooms are required to have state teacher certification; however, one teacher has been temporarily appointed to fill the position and does not have certification. This teacher has been a daycare center director in a large city for 8 years and is 51 years old. The other teacher is certified in elementary education, is 22 years old, and is completing her first year of teaching. The two paraprofessionals have high school diplomas. One

paraprofessional has 5 years experience and is 40 years old and the other has 7 years of experience and is 29 years old.

There is no prescribed curriculum in this private school. The two teachers develop thematic teaching topics together using a variety of sources. The younger teacher with the elementary education degree also includes "the letter of the week" in her teaching activities although these activities do not always relate to the thematic topic. For example, during the same time the class explored fish as a topic, the letter P was introduced and the children glued popcorn to letter P cut outs. This teacher uses some letter-sound correspondence worksheets while the elder teacher emphasizes more storybook reading as literacy experience. Both teachers used books purchased by the school as their primary source of storybooks.

Morning activities include a morning song, morning story, calendar, and weather charting. Both classrooms have activity centers that are labeled including a computer center. Chairs are labeled with child names and many items are labeled such as door, clock, and window. No connected written discourse was observed on walls in either classroom except for a morning story.

Parochial School

In this city there are two pre-K classrooms housed in a Catholic school serving children from grades pre-K through 12. One pre-K classroom enrolls 21 children and the other enrolls 23 children. The population of the parochial school is primarily Caucasian and only two African American pre-K age children

are enrolled with one child being in each classroom. All families pay monthly tuition of \$170 for each child attending this elementary school with the addition of initial book fees of \$125 per child and an annual building and maintenance fee of \$125 per family. Children may bring their lunch or purchase lunch at the school. The SES background ranges from low middle- to high-income families, including parents with professional occupations, families with farm and oil income, and parents with technical or factory occupations.

The two Caucasian teachers in the pre-K classrooms are state certified as kindergarten and nursery school teachers. One teacher has 7 years experience and is 30 years old and the other has 8 years of experience and is 34 years old. The paraprofessionals are also Caucasian and both have high school diplomas. One paraprofessional has 4 years experience and is 40 years old and the other has 16 years of experience and is 53 years old.

The curriculum in the parochial pre-kindergarten classrooms is organized around themes although the two teachers do not plan together. Both teachers have morning routines that include a morning story, singing, calendar updating and weather charting as well as selecting the daily "helpers." One teacher includes "the letter of the week" activities along with theme topic activities in literacy instruction. "Letter of the week" activities may or may not be integrated with the thematic topic. This same teacher emphasizes graphing activities within the exploration of each topic and many large graphs with colored cut outs posted by individual children are displayed on the walls of the classroom. The other teacher centers literacy instruction within theme topics. This teacher has

the children attend to connected written discourse in the form of songs, poems, or finger plays written on chart tablets with accompanying teacher drawings. She also includes charting activities requiring the children to glue paper cut outs to appropriate columns or rows. Both teachers have large personal collections of storybooks and many children bring personal storybooks from home. Well-defined center areas including computer centers exist in both classrooms.

Subject Selection

Four subjects were selected from each classroom, for a total of 32 children. An equal number of males and females were represented in each group. Children were between the ages of 4;6 years and 5;6 years. The performances of pre-K children were compared across a continuum of representational levels and correlated with questionnaire reports of direct and indirect literacy experiences. Subjects participated on the basis of selection criteria, including age, gender, and classroom performance.

Consent for Participation

Permission to collect data in the classrooms was obtained from the appropriate authorities administering each program. An individual meeting was then held with each participating teacher to explain the project and procedures and to obtain a consent form for teacher participation (see Appendix A). The teacher was then asked to answer a questionnaire regarding teacher and classroom characteristics. The investigator recorded the teacher responses to this questionnaire during an interview. Teachers then sent parental consent for participation forms (see Appendix B) to parents or legal guardians of each

eligible child explaining the project and inviting the parent and child to participate. Those children returning signed consent forms were placed in the pool of potential subjects. The parent consent form explained the following information:

1. Eligibility and probability for selection as a subject in the study;
2. Purpose of the study;
3. Procedures for the study;
4. Potential risks or benefits;
5. Assurances of confidentiality;
6. Right for withdrawal of consent at any time and assurance that a decision to participate or not participate will not affect the child's school program; and
7. Offer to answer questions of parents or legal guardians concerning the study.

Selection Criteria

To qualify for inclusion in the study, subjects met the following criteria:

1. Parental consent for participation;
2. A chronological age between 4;6 to 5;6 years;
3. A classroom performance in the average range compared to peers as determined by the following forced-choice sorting procedure:
 - a. The examiner and classroom teacher met and placed the name of each child in the classroom on a 3x5-index card.
 - b. The examiner provided a list of child characteristics, comprised of level of attention, activity level, communication skills, participation in

classroom activities, and achievement level on skills emphasized in the classroom curriculum.

- c. The teacher was asked to view the index cards and select the name of the child who was lowest on these criteria in her classroom and the child who was highest on these criteria.
 - d. The forced-choice of next lowest and next highest was continued until all children have been classified. All index cards were then numbered from 1 (the child ranked highest in the class) to 20+ (the child ranked lowest).
 - e. The four children classified as lowest and the four children classified as highest were eliminated from consideration. The remaining children were considered in the average range for that classroom. Only children in this range with signed consent forms were selected for the study¹.
4. Normal sensory and motor skills, as determined by school screenings for vision, hearing, and motor skills; and
 5. From the pool of subjects who met the above selection criteria, two males and two females were selected and administered the *Test of Nonverbal Intelligence: A Language Free Measure of Cognitive Ability, Second Edition* (TONI-2) (Brown, Sherbenou, & Johnson, 1990)². If performance fell within the average range, defined as within 1.5 standard deviations from the mean, the child was selected as a subject.

Procedures

The purpose of this study was to compare the representational abilities of children across a continuum of 7 representational levels from event reenactment through verbal narrative, and to correlate measures of representational content and form with direct and indirect literacy experiences in the home. All subjects were administered a series of seven representational tasks adapted from a procedure proposed by Naremore (1997). Performance on each task was analyzed for representational content (i.e., information related to event or story structure) and for form (i.e., MLU, syntactic completeness and complexity measures).

The representational tasks were organized around the Situational continuum outlined by Norris and Hoffman (1993, 1997, 1999). These representational tasks included both canonical events (the regular sequence of acts occurring within an ordinary event) and narratives (a deviation from the canonical event that results in a problem and need for a solution). All representational tasks focused on the nightly experience of going to bed. The bedtime routine was selected because it was judged to be experienced with the same frequency and to have more similarity in procedure for children across gender, families, and SES. The bedtime routine was chosen in opposition to the morning routine because children in public school programs ate breakfast at school on school days and had breakfast at home on the weekends and holidays. Most all subjects in the private and parochial schools ate breakfast at home everyday. Other possibilities for the focus routine were common early

childhood events such as going to a birthday party or to fast food restaurants such as McDonald's. These events were eliminated because they were judged to occur with differing frequency or regularity across families. Although the bedtime routine was selected for similarities across families, individual differences in the family bedtime routine were recognized and accounted for by a procedure described below.

Canonical Event

The investigator first generated a potential canonical event of the bedtime routine. The sequence of event actions was generated from the acts commonly associated with the bedtime routine for pre-K children, from additional or different acts that were mentioned in the family routines during a pilot study, and from the literate language experience considered to be necessary for comprehension of storybooks relating to the bedtime routine. The resulting canonical event consisted of a sequential list of eight categories of information associated with the routine, including a preliminary event (undressing), a consequence (getting in the tub or washing up), a transition from bathing/washing (getting out of the tub, drying off), preparation for bed (putting on nightclothes), naming a habit (snack, brush teeth), stating a readiness activity (watch videotape, say prayers, read book,), stating the outcome of the routine (get in bed, pull on covers, kiss), and relating a coda to the routine (shut off light, say goodnight, fall asleep). The canonical event for each child was modified as needed to account for familial, social, or cultural

differences in the bedtime routine and this modification was used in scoring child performances.

Caretaker Telephone Interview

A parent or other primary caretaker was contacted to answer the Home Literacy Experience Questionnaire (see Appendix C) in a telephone interview. The informant for this questionnaire was also asked to provide the sequence of events in the child's normal bedtime routine. An explanation regarding the purpose of the telephone interview and confidentiality concerning the informant's report was provided before questioning commenced (see Appendix D).

Direct and Indirect Literacy Experience Questionnaire

Questions targeting direct literacy experiences in the home such as those involving the child's interaction with printed materials or those involving talk about letters, words, or numbers were interspersed with questions targeting indirect literacy activities. Indirect literacy activities involve language between the parent/caretaker and child that assists the child in organizing and understanding the world or structuring experience in ways that mediate or scaffold the child toward acquisition of a literate-language style. During this telephone interview, the informant was asked a series of 54 questions, with an equal number of items relating to direct literacy practices and indirect literacy practices. Four items were unrelated to either category and were included as reliability measures.

Family Routine

Immediately after the parent or primary caretaker completed the direct and indirect literacy experience questionnaire, this informant was asked to explain the typical bedtime routine for the child as it occurred in the home (see Appendix E). Individual differences in the family bedtime routine were identified using the telephone questionnaire described below. This family report was not analyzed or compared across subjects. The family bedtime routine, as reported for each child in the telephone interview, was used to evaluate the first four tasks: nonverbal enactment, picture sequencing, verbal supported enactment, and verbal account.

The informant was told that the child's play and stories would be compared to their description of the bedtime routine and that it was important to include the things regularly done before the child's bedtime. The acts on the Canonical Event list (see Appendix F) were numbered in the order mentioned by the informant; written descriptions of any additional acts mentioned by the informant were added and numbered to maintain the sequence. If the informant mentioned fewer than eight categories as part of the family bedtime routine or if the acts mentioned did not directly imply related acts ("We watch TV until she falls asleep and then we carry her to bed"), the informant was prompted with questions such as: "Do you usually do ____ at bedtime? Where does this occur in your typical bedtime routine?" All acts mentioned were recorded on the Family Bedtime Routine form and were referenced in scoring child performances on Tasks 1 through 4.

Representational Tasks and SDS Levels

Child tasks were designed to match conceptual definitions of the Situational continuum from the SDS model (Norris & Hoffman, 1997). The Situational context is the overall framework for representing information perceived by and integrated within the cognitive, semiotic, social, and sensory motor domains. Embedded within this Situational context are the levels at which this information can be organized (i.e., Discourse levels) and processed (i.e., Semantic levels). Theoretically, children reared in a literate culture progress from lower to higher Situational levels in development. Therefore, levels on the Situational continuum represent the child's level of displacement or the distance at which the topic can be maintained from the child's own body and perspective, and the degree to which symbolic concepts can be maintained and acted upon mentally. The tasks developed for this study were designed to assess development along this continuum.

Theoretically, children would earn higher scores on low level tasks using concrete objects to physically enact the routine and lower scores on high level tasks requiring knowledge of story structure and the ability to create the entire context symbolically. However, tasks would also be expected to be influenced by the requirement that higher level tasks require more decontextualized language or language that makes content more explicit with more complexity in form. Performances on all seven tasks from Level III: Contextualized Relational to the Level IX: Decontextualized Symbolic were provided by the subjects in one approximately 30 minute session. Each subject received the same

instructions for each task (see Appendix G). Child performances for each task were video and audio recorded using a video camera mounted on a tripod accompanied by a directional microphone.

Task 1. High Support Enactment, SDS Level III: Contextualized Relational

Nonverbal Enactment was the first analyzed task, and was designed to assess the ability to represent the canonical event through re-enactment using life size or real props. The child was directed to look at a set of props including a plastic tub large enough for the child to sit in and resembling a bathtub, soap and a towel, a nightshirt, a plastic bowl and a stainless steel spoon, a new disposable toothbrush, a storybook, a Sesame Street videotape, and a small blanket and pillow. Each child was asked to demonstrate what you should do at night when it is time to get ready for bed. The children were told that they could use the props or if they needed something that was not in the prop box, they could make up pretend objects. Children were also told to pretend to do things such as undress, rather than really undressing.

Task 2. Picture Sequencing, SDS Level IV: Contextualized Symbolic

The Picture Sequencing task was designed to assess the child's nonverbal ability to symbolically represent acts from the bedtime routine although accompanying verbal acts were also recorded. Cards were constructed using photographs of four-year-old children taken in their homes while their mothers attended them in preparing for bed. One set pictured an African American female child and one set pictured a Caucasian male child. Both children were photographed performing the same eight acts reflecting

potential acts in the bedtime routine. The subject was presented with the first four photo cards and asked to sequence the cards in a way that showed how a child gets ready for bed. The child was then presented the four remaining photo cards of subsequent acts and asked to arrange them in proper sequence. Next, the child was asked to point to each photograph in the sequence and tell what the pictured child was doing in each picture. All subjects were given opportunities to rearrange the sequence if they desired while talking about the pictures. If the child pointed to a photograph and said nothing, the child was prompted with the question, "What's happening there?"

Task 3. Low Support Enactment. SDS Level V: Contextualized Logical

The Low Support Enactment task was designed to assess performance when only minimal props were available and verbal symbolic ability was required to create the context for explaining the bedtime routine. The child was given a six-inch doll (of the same race and gender as the child) and was told that the boy (or girl) needed to get ready for bed. This task required role-playing using miniatures to represent people. The child was asked to help a dog puppet³ to learn everything a boy (or girl) needed to do before going to sleep at night. The examiner stated that the puppet could learn if the child could show him and tell him everything a boy (or girl) needed to do before going to sleep. Only two props were provided: a miniature bar of soap, and a doll-sized blanket. The child was required to verbally create much of the context. If the child only mentioned and demonstrated one or two acts, neutral prompts were used that encouraged additional information ("Can you help the boy/girl do anything else

to get ready for bed and tell the puppet about it?"). To create a sincere context, after the child completed the task, the examiner had the puppet get the doll ready for bed. If the child asked for the puppet, the child was allowed to manipulate the puppet to help get the doll ready for bed and was assisted in play by the examiner.

Task 4, Verbal Account, SDS Level VI: Decontextualized Egocentered

The Verbal Account task was designed to assess abilities to represent the entire bedtime routine symbolically through language. All props were removed from the child's sight. To create a sincere context, the subject was asked to explain the sequence to a frog puppet that wanted to be a child and was trying to learn how to get ready for bed like a real boy or girl would get ready for bed. The subject was encouraged to tell this puppet as many steps as he or she could remember to make sure the puppet did everything just like a real child needed to do at home. If the child only provided one or two acts, neutral prompts were used that encouraged additional information ("Can you tell the puppet anything else to get ready for bed?"). Prompts that could inform the child's response ("Tell her about brushing your teeth.") were not provided. Following the child's explanation to the puppet, the examiner made it perform the routine in a slapstick manner or if the child asked to manipulate the puppet, he or she was given the puppet and assisted in acting out the child's reported routine. This reenactment of the child's enactment was used only to create a sincere context for the task.

Task 5. Story Retelling. SDS Level VII: Decontextualized Decentered

Stories involve a plot that represents a deviation from the canonical event: Bedtime started typically but soon something happened to create a problem with attempts to solve the problem. Retelling the story represents a task at the SDS Level VII because the story was not the child's own experience, but was originally encountered as a contextualized, visual experience. The child is required to recall events independently of the storybook context and to structure events in an appropriate discourse framework.

The text of the storybook *Bedtime Cat* (Reiser, 1991) was slightly modified to create a simple story that followed the plot of the original text including the main elements of complete story structure. Two versions were created and were identical except that one featured the original Caucasian girl and parent and the other featured an African American child and parent within the original drawings of the story's artist. These images were made by superimposing features of an African American mother's and child's faces and skin color over the original version depicting a Caucasian mother and child.

The child was asked to sit next to the researcher during the story reading and was allowed to sit in the examiner's lap when the child initiated the act. The examiner pointed to pictures as the text was read. Supplemental language to the story text was provided only to explicitly inform the subject of a pictured scene depicting the little girl as unaware that her cat had run off and also to explicitly inform regarding a scene depicting the little girl discovering the location of her cat in her bed where only the cat's ears were exposed. Child

comments and child points during story reading were acknowledged with a neutral response such as "Oh" or "I see." No expansions, extensions or expatiations were provided. Immediately following the reading session, the book was removed from the child's sight and the child was asked to retell the story to the dog puppet who was "asleep and didn't get to hear the story." The puppet was then retrieved from underneath the blanket and made to assume a listening stance. The child attempted to retell the story from memory. If the child provided only one or two elements of the story, neutral prompts were used that encouraged additional information without suggesting any specific events from the story.

Task 6, Group Routine, SDS Level VIII: Decontextualized Relational

Generation of a potential Group Routine was used to assess the child's ability to use knowledge of the bedtime event and story grammar or narrative framework to generate a routine event for a known group of children directed by a known teacher in a familiar setting. This represented SDS Level VIII as the task required the ability to formulate rules for solving a hypothetical problem. The solution required that the child relate a familiar individual routine to a familiar group context. In this task children were told that there was a difference between the way families do things at home and the way things are done at school. An example was provided describing the differences in the lunch event at home and at school.

The child was then presented with the new condition at school for which rules were required. The child was asked to formulate the group routine. The

examiner asked the child to tell the story about how the group would manage to get ready for bed under the new condition. The researcher then looked at the child and displayed interest and expectancy in hearing the child's rules for the group routine. Acts or elements were generated independently. If the child began to tell the rules, the researcher demonstrated that she was listening with comments such as, "Oh." If the child did not begin to formulate rules, neutral prompts were provided without suggesting any specific acts or elements such as, "What happened on that stormy day?" If the child began and stopped, neutral prompts were again provided such as, "and then" or "and next."

Task 7. Story Generation. SDS Level IX: Decontextualized Symbolic

In the Story Generation task the child was asked to generate an imaginary story and was provided with a story starter. The child was required to verbally create a story based on a same sex fictitious character (Carl or Carla) who encountered a deviation from the usual bedtime routine. The story starter used was: *One night when it was time for Carl/a to go to bed....* The researcher then looked at the child and displayed interest and expectancy in hearing the child's story. If the child began to tell the story, the researcher demonstrated that she was listening with comments such as, "I see," "Really?" or "Oh my." If the child did not begin a story, up to three neutral prompts were provided. If the child began to generate a story and stopped, neutral prompts were again provided.

Measurements

Measurements included scores for home literacy experience or the predictor (independent) variable and scores for content and form or the criterion (dependent) variables. A questionnaire, administered via telephone was used to obtain measures of home literacy experience. Measurements of content and form in performances across representational tasks were also developed. Rules for scoring (see appendix G) were developed during a pilot study and were expanded as needed for the present study and applied to all 32 child performances on the appropriate level tasks

Scoring for Home Literacy Experience

Measures of home literacy were computed by totaling columns, on the response sheet for the caretaker questionnaire, where responses for direct literacy items were recorded and columns where responses to indirect literacy items were recorded. The questionnaire format used a Likert scale with questions concerning how often they engaged in certain activities with their child or how often they observed their child participating in certain activities. Responses being valued in a range of 0 to 5 with 0 representing *never*, 1 representing *about once a month*, 2 representing *about once a week*, 3 representing *several times a week*, 4 representing *about everyday*, and 5 representing *several times a day* (see score sheet in Appendix H). Separate scores were calculated for direct and indirect literacy practices.

Content Scoring on Representational Task Performances

Content scoring reflected the child's knowledge of the event, including the information provided consistent with the event or story structure. For each of the seven tasks relating to events and stories, 8 categories of informational content were determined and listed on score sheets designed for each task (see Appendix I). A potential of three points was possible for each category. One point was awarded for gestural (for Tasks 1, and 2 only because higher level tasks required linguistic creation of elements) or verbal inclusion (Tasks 1 through 7) of one element from the category. For example, in Task 1, the child could enact taking a bath and/or state that you need to take a bath. In Task 2, the child could place the photograph of the child in the bathtub in a logical sequence without verbalizing what was depicted in the photograph and still receive a point. Task 3 performances could earn some points by gesturing such as laying the doll down and covering it with the blanket; however, because only two props were provided, the child had to use language to communicate many elements required for earning points in other categories.

A second point was awarded for one or more additional gestural (in Tasks 1, 2, and 3 only) or verbal elements (for Tasks 1 through 7) within the same category such as gesturing or stating that you first have to undress and then you take a bath. Also, a second point could be awarded for the presence of an elaboration. This could be either a gestural elaboration (in Tasks 1, 2, and 3 only) or a verbal elaboration (in any of the seven tasks) of one or more elements in a category such as gesturing or verbalizing putting soap on a

washcloth and then using it to wash up in the bath. A third point was awarded for performance in each category if the elements were verbalized, such as telling the action while also enacting it nonverbally. In the case where the subject provided only verbal information, this reference to the act using language subsumes the enactment or gestural act so additional points for including a verbalization were awarded in each category across tasks to allow for comparable scores across tasks. Therefore, a child could earn up to two points through gestural acts and elaborations, but could only earn three points by including verbal acts in the performance. Tangential acts or other non-canonical acts ("She put the boat in the tub because it can really go and she got it at the beach on vacation when they stayed in a condo.") were considered as miscellaneous and were not scored.

Content Scoring for Event Structure Tasks

For tasks 1, 2, 3, and 4 the completeness and plausibility of the child's representation was measured by determining the number of acts performed, gestural and/or verbal, from the eight categories of the Canonical Event. Scoring procedure began with viewing the videotape, transcribing the child's language verbatim while also describing the child's gestures when these gestures were not accompanied by verbalizations describing the same gestures. Each gestural act (or reference by sequencing photographs for Task 2) and/or verbal act was classified for inclusion as part of a canonical category and then evaluated for plausibility. Plausibility judgment reflected the possibility

that the act could occur in the given order relative to the acts it immediately preceded and followed.

The child's acts were recorded in the sequence in which they were given and then classified according to the categories of the Canonical Event or Family Routine. Acts, judged to be implausible relative to the Canonical Event or the reported Family Routine, were classified as implausible and no points were awarded. The total number of points awarded from a potential of 24 resulted in a content score.

Content Scoring for Story Structure Tasks

For Tasks 5, 6, and 7, the completeness and plausibility of the child's story representation was measured by determining the number of verbally stated story elements from the eight Story Structure categories. Scoring procedure began with viewing the videotape, transcribing the child's story verbatim, and then dividing it into story elements. Each element was classified for the Story Structure category for which it could plausibly be included. Plausibility judgment reflected the possibility that the story event could occur in the given order relative to the events it immediately preceded and followed. Gestures accompanying verbal acts in Tasks 5, 6, and 7 were noted and were used to support interpretations of verbal information but the child could not earn points for gestural acts as these tasks required verbalizations. Thus, a child could earn 2 points for verbalizing one component within a category, and three points for including either a second component or an elaboration with a maximum of three points awarded in each category.

Scoring for Linguistic Form

The second criterion or dependent variable was scores obtained for the linguistic form of the child's verbalized script or narrative. The form of each verbalized representation was scored in a manner parallel to the content scoring. For events and stories the most complex terminal-unit (T-unit) (Hunt, 1965) from each of the 8 categories of information was selected for analysis. A T-unit is defined as one main clause and all subordinate clauses attached to it. Only one T-unit per category was included in the analysis for purposes of deriving a form score, even if several T-units were produced in that same category. A potential of three points was possible for each scored sentence. One point was awarded for a T-unit that contained 5 words or more. This was awarded if the mean length utterance (MLU) was age appropriate as established by (Brown, 1973). Brown's Stage V (i.e., 4.5 morphemes) was the level used because it is achieved by most children at age 4. This measure was also consistent with the overall MLU for 4-year-olds according to the Wisconsin Reference Database (Leadholm & Miller, 1992) for Narration (i.e., 5.23 morphemes). A second point was awarded for a T-unit that was a complete sentence according to the dialect spoken by the child.

Characteristics of African American Vernacular English or Southern dialect as outlined by either Craig and Washington (1995) or (Shames & Wiig, 1986) was referenced in making decisions concerning completeness. Deletions such as not using the infinitive marker *to*, the copula forms *is* and *are*, or modal auxiliaries *will*, *can*, or *do* were coded in transcription. Insertions such as the

use of double copula (*I'm is*), multiple negation (*don't have no fun*), or appositive pronouns (*her mama she*) were also coded in transcription. Note that it is possible to obtain a point for completeness without a point for sentence length or vice versa.

A third point was awarded for production of a complex T-unit, defined as a compound sentence or an embedded structure. The point was awarded even if the T-unit was judged to be incomplete, such as a sentence ending that was abandoned, as long as the complex structure was present (e.g., "When the water and bubbles are ready, you get in and start, well you wash, um ...").

Reliability

Procedures were employed to improve reliability for measures of both predictor and criterion variables. The score for the predictor variable was obtained from responses to the Family Questionnaire for Direct and Indirect Literacy Practices in the Home. Criterion variables included measures for content and form in the child's performance on the seven representational tasks.

Reliability in Predictor Variables

Reliability for the Home Literacy Experience Questionnaire (see Appendix C) was established in the following manner. Four of the questions were unrelated to direct or indirect literacy experience and were presented directly before items seen as vulnerable to false reports. These items were not scored and included a question answered using the Likert scale with a follow up question requesting specific information about the response to the prior

question. This design was believed to cause the informant to expect a follow up question in next item. The next item did have a follow up question also requesting specific information such as, "What is the title of this book?" The specific information given was not scored or analyzed.

Four questions in both the direct and indirect literacy experience categories were designed as reliability checks and rephrased previous items in the same category. Responses from both the original questions and the rephrased ones were included in analysis as responses were within an acceptable range for reliability. The range of difference between responses on the reliability questions was 6 points. Answers to all eight reliability questions had a possible difference range of 48 points. All caretaker interviews fell within 7 points difference with the average difference being 4.18 points which approximates 90% of the 48 points. This was determined be an acceptable range of difference and evidence that the parents made sincere attempts to be truthful. The careful wording of the instructions (see Appendix D) may have also influenced the responses.

In obtaining the Family Routine, the parent was informed that the activities their child participated in related to the bedtime routine because this is the one routine that all children experience on a nightly basis and one they might remember better than others. They were then told that the accuracy of their child's memory would be compared to the caretaker's report to encourage caretakers to provide the child's most common routine.

Reliability in Criterion Variables

Reliability was facilitated through the examiner's use of instruction cards for each task to insure that all children received the same instructions (see Appendix F). In all schools, similar settings were chosen and all seven performances were provided in the same setting and time frame. The examiner was provided with a classroom that was either unoccupied (a middle school classroom) or converted for support services (e.g., unoccupied itinerant speech therapist's room or parenting center). The same props were used for each performance except for those depicting a child and mother of a particular race. Dual props were developed for both races and were identical in the actions and settings depicted. Additionally, a disposable toothbrush was replaced whenever a child actually inserted the toothbrush in his or her mouth. Tasks were presented to child subjects in computer generated randomized sequences. This procedure was used to eliminate the effects of warming up, peaking, and tiring during the course of task performances.

Intrajudge reliability in scoring the performances was facilitated through Rules for Scoring Child Performances (see Appendix J). These rules were generated during the scoring of four transcripts from a pilot study conducted within the same parish but outside of the small city. These same rules with some additions were applied in scoring all transcripts collected in the present study.

Interjudge reliability for scoring the content and form were accomplished using two judges: the investigator and an independent judge, a graduate

student in law school. Prior to the interjudge's scoring for reliability, the investigator trained the independent judge. Data for training was obtained from video recordings of four children performing the 7 representational tasks (28 performance samples) during a pilot study. The first training procedure focused on observing videotape and recording one child performance for each representational task into written transcripts. After reaching 90% agreement⁴ in transcription of performances, training on segmentation into T-units was accomplished and also reached 90% agreement.

The second independent judge training session involved scoring for content. The sequence of gestural and verbal acts from the child's performances, used to indicate knowledge of event structure (or story structure) were compared to the reported Family Routine (i.e. Canonical Event for the child) for sequencing and plausibility errors. Judgments for questionable acts in Tasks 1 through 4 were made by comparisons to the stereotypical Canonical Event and with regard to plausibility for the child's sequence of the event. In Task 5, plausibility was based on whether or not the verbalizations of the child were performed with regard to the actual story even though some acts could be omitted. In Tasks 6 and 7, plausibility was based on whether or not the order of events were logical relative to the ones immediately preceding and following it in sequence. Acts that were implausibly sequenced did not earn points. Training continued until 90% interjudge agreement on scoring of performances was reached⁵. Training was then directed to scoring for elaboration in gestural acts and verbal acts.

The third independent judge training session included coding T-units for specified measures of linguistic form. The transcripts from the same 28 performances from the four children in the pilot study were used as the child language samples in this training procedure. Training in segmentation of T-units and coding for completeness and complexity was continued until 90% agreement was reached. In scoring for content and form, there were occasions when disagreement exceeded 10%. At these times, the rules for scoring were reinterpreted for the independent judge and sometimes revised or an additional rule written to promote clarity in meaning until 90% agreement could be reached.

The independent judge was then asked to randomly select 25% of the transcripts from the present study or 8 sets of child transcripts having a total of 56 task performances. These performances were reanalyzed to establish the reliability of transcription, segmentation into T-units, and scoring of content and linguistic form. Agreement between the independent judge and the investigator reached 90% for all procedures.

Data Analysis

Scores on task performances were subjected to a repeated measures analyses of variance (ANOVA). The independent variable in this analysis was the level of representational task, for which there were seven levels. The dependent variables were a measure of the content (i.e., the information provided consistent with event or story structure) and a measure of form (i.e., the completeness and complexity of language, measured in T-units, used in the

verbal representation). Separate repeated measures ANOVAs tested for differences in content and form scores, with child performance scores expected to generally decrease as task difficulty increased. Less decrease in form scores was expected considering the requirement that higher level tasks require the use of more decontextualized language. tests were used to determine significant differences between task mean scores. For significant ANOVA tests, Tukey *post hoc* tests were performed to determine pairwise differences in the means under study. Tukey tests were used because the test is designed to compare all pairs of means, as opposed to all contrasts. Also, it has a type I error rate of alpha, which was set at .05 in this study, for all pairwise comparisons.

Subgroups were formed for further insight regarding differences in performances across tasks. A total home literacy experience score was computed by adding direct and indirect literacy experience scores for each subject. The total scores for 12 subjects fell below 100 and 12 fell above 130. The eight middle scores were considered average scores and were eliminated in further analyses so the two groups would represent higher and lower than "average" scores on home literacy experience. The subgroups were termed Low Literacy Experience (LLE) and High Literacy Experience (HLE), although it is important to remember that these subjects were originally selected for the study because they were identified by the teacher as having average performance in their respective classrooms located within the small city's three

elementary schools¹. Tests for the simple effect of group were performed for both content and form on each task using a one-way ANOVA.

Content and form measures obtained on each task for each subject were then correlated with the subject's caretaker report score for direct and indirect literacy experience. Twenty-eight Pearson's correlations were calculated to determine the relative relationship of (a) direct literacy experiences score to content score at each of the seven representational levels; (b) direct literacy experiences score to form score at each of the seven representational levels; (c) indirect literacy experiences score to content score at each of the seven representational levels; and (d) indirect literacy experiences score to form score at each of the seven representational levels.

Endnotes

¹ In the case of one Head Start classroom, the teacher refused to participate in the forced-choice procedure as she felt it was unnecessary. This teacher presented four signed consent forms to the investigator, stating that these were the only children whose parents had agreed to participation. When asked whether the children represented those with average classroom performance, the teacher insisted that they were all high on classroom performance. A decision was made to include these children in the study as the teacher went on to say that she had no average children in the class and that they were "all high" and TONI-2 scores fell within the typical range.

² The TONI-2 is a language-free, motor reduced, and culture reduced measure of intellectual functioning. All items require perceptual and abstract/figural problem solving.

³ A similar procedure is reported by Norris, C. and Bruning, R. (1988). They attempted to set up conditions such that child storytellers would not assume shared knowledge. After hearing a story, children were asked to retell the story to a puppet that had not been paying attention but needed the information to relate to someone else.

⁴ Percent of agreement was calculated by the investigator and involved first determining the number of T-units transcribed in agreement. Next .90 was

multiplied times the total number of T-units in the child's performance. If this resulted in a figure at or above the number of T-units scored in agreement, 90% agreement was assigned.

⁵ The procedure used in calculating percent agreement in transcription and based on the number of T-units was also used in calculating agreement in content and form scoring.

RESULTS

Two questions were proposed by this study. The first question was to determine if the level of representational displacement of tasks affect the performance of prekindergarten children for content (i.e., information consistent with event structures and story structures) and verbal form (i.e., MLU, syntactic completeness and complexity) consistent with predictions of the Situational-Discourse-Semantic (SDS) model? The tasks and their corresponding SDS levels are listed in Table 4.1. The second question addressed the relationship between the level of representational displacement of tasks and the performances of prekindergarten children who differ in literacy experience for content and verbal form. Caretaker reports for home literacy experience were obtained by responses to a telephone questionnaire. Analyses of the performance scores for 32 subjects on the seven representational tasks were conducted to answer these two questions.

Table 4.1
Representational Tasks 1 – 7 and Corresponding SDS Levels

Task		SDS Situational Level	
1	High Support Enactment	III	Contextualized Relational
2	Picture Sequencing	IV	Contextualized Symbolic
3	Low Support Enactment	V	Contextualized Logical
4	Verbal Account	VI	Decontextualized Egocentric
5	Story Retelling	VII	Decontextualized Decentered
6	Group Routine	VIII	Decontextualized Relational
7	Story Generation	IX	Decontextualized Symbolic

Performance Differences across Representational Tasks

The first question addressed whether the content and form scores on performances would differ across representational levels of displacement. Representational conditions ranged from highly familiar and contextualized to unfamiliar, hypothetical, and decontextualized. Results were first obtained for the whole group of 32 subjects.

Differences in Content Scores across Tasks

Mean and standard deviation scores for content on each representational task were examined for differences across tasks. Content scoring reflected the child's knowledge of the event, including the information provided consistent with the event or story structure. For each of the seven tasks relating to events and stories, children could earn a potential of 3 points for each of 8 categories of informational content. Points reflected gestural (in Tasks 1, 2, and 3 only) or verbal inclusion of one or more elements in the category, and elaboration of an element. Mean content scores for all seven representational tasks are presented in Table 4.2. The mean scores reveal a general trend in the predicted direction, with the exception of Task 7. That is, the mean content scores for lower level tasks were generally larger than the mean scores for higher level tasks, indicating a pattern of decreasing performance as the level of task difficulty increased. Mean content scores for all seven representational tasks are presented in Table 4.2.

Table 4.2
Means and Standard Deviations for Content Scores on Representational Tasks 1-7 for all 32 Subjects

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Mean	12.781	13.875	9.406	9.813	7.500	5.250	8.188
SD	3.982	2.393	3.435	2.934	2.627	2.995	4.497

A repeated measures Analysis of Variance (ANOVA) was used to determine if the mean differences for content scores across tasks were significant (see Table 4.3). The independent variable in this analysis was the level of representational task, for which there were seven levels. The dependent variable was a measure of the content (i.e., the information provided consistent with event or story structure).

Table 4.3
Repeated Measures ANOVA for Content Scores on Representational Tasks 1-7 for all 32 Subjects

Effect	SS	df	MS	F	p
Task	1721.12	6	286.85	40.92	.0001
Error	1303.74	186	7.01		

Results of the ANOVA were significant ($F_{6, 186} = 40.92, p \leq .0001$), indicating differences did exist between performances on tasks of different levels (see

Table 4.3). To determine if the differences were in the predicted direction (i.e., lower level tasks elicited higher scores for content than higher level tasks), Tukey *post hoc* tests were conducted. This analysis compared each level of task to each of the task levels above it to determine if significant differences existed between mean content scores. Table 4.4 profiles these results. The first two tasks followed the predictions of the SDS model. Task 1, High Support Enactment, met predictions, with nonsignificantly different scores to the next level task (Task 2) but significantly higher scores compared to the next 5 higher level tasks. Task 2, Picture Sequencing, met predictions, with significantly higher scores compared to the 5 higher level tasks.

Table 4.4
Tukey Post Hoc Results Comparing Mean Content Scores on Each
Representational Task to the Tasks Rated as Higher in Level on the SDS Model

	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Task 1	NS	*	*	*	*	*
Task 2		*	*	*	*	*
Task 3			NS	NS	*	NS
Task 4				*	*	NS
Task 5					*	NS
Task 6						*

Task 3, Low Support Enactment, was not significantly different from the next two tasks, with a mean comparable to Task 4 and a predicted higher mean than

Task 5, Story Retelling, that did not reach a level of significance. Performance for this task was significantly higher than for Task 6, Group Routine, but not Task 7, Story Generation. These results followed the predicted pattern with the exception of comparison to Task 7, but not consistently at a level of significance. Task 4, Verbal Account, followed predictions, with a significantly different score from the next two higher tasks (Tasks 5 and 6). Task 5, Story Retelling was significantly higher than Task 6, as predicted but not Task 7. Task 7 had an unpredicted high mean score for content compared to other higher level tasks, but also a large standard deviation indicating considerable variability between subjects and resulting in a nonsignificant difference from other higher level tasks except Task 6, Group Routine.

Summary

The results of the first analysis indicated general support for the prediction that young children would be able to provide more information related to the content of the bedtime event for tasks rated as lower level of the SDS model than for tasks rated as higher or more abstract. The two lowest level tasks had means that were not significantly different from each other but were significantly higher than all of the five higher level tasks. Similarly, the next two tasks (Task 3 and 4) were not significantly different from each other but were significantly higher for all but Task 7, Story Generation. Task 5 had a significantly higher mean score than Task 6, Group Routine, as predicted, but this difference did not reach a level of significance. The unpredicted finding was for Task 7, which was expected to be the most difficult and thus have the lowest

score. This task proved to be only significantly more difficult than Tasks 1 and 2, comparable to Tasks 3, 4, and 5 and easier at a level of significance than Task 6.

Differences in Form Scores across Tasks

Mean and standard deviation scores for form on each representational task were examined for differences across tasks. The form score reflected the completeness and complexity of the child's verbalizations for each of the 8 categories of informational content. Children could earn a potential of 3 points for each of these 8 categories of informational content on all seven tasks relating to events and stories. Points reflected obtaining a minimum MLU of 5 words, verbalizing a complete sentence, and verbalizing a complex sentence.

Mean form scores for all seven representational tasks are presented in Table 4.5. The mean scores for language form do not reveal a consistent pattern of performance. High scores for form were obtained for lower level tasks as predicted (Tasks 1 and 2), but also for higher level tasks (Tasks 5 and 7).

Table 4.5
Means and Standard Deviations for Form Scores on Representational Tasks 1-7 for all 32 Subjects

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Mean	4.845	6.656	3.750	4.625	5.625	2.688	5.344
SD	4.437	5.128	3.473	3.230	2.297	2.221	3.552

Similarly, low scores for form were obtained for Task 6 as predicted, but also Task 3. Generally, the means for form across tasks were similar to each other indicating little variability between tasks. At the same time, standard deviations for many tasks were large, indicating considerable variability between subjects.

A repeated measures ANOVA was used to determine if the mean differences for form scores across tasks were significant (see Table 4.6). The independent variable in this analysis was the level of representational task, for which there were seven levels. The dependent variable was a measure of form (i.e., the completeness and complexity of language, measured in T-units, used in the verbal representation).

Table 4.6
Repeated Measures ANOVA for Form Scores on Representational Tasks 1-7 for all 32 Subjects

Effect	SS	df	MS	F	p
Task	320.61	6	53.43	6.26	.0001
Error	1587.96	186	8.54		

Results of the ANOVA were significant ($F_{6, 186} = 6.26, p \leq .0001$); indicating differences did exist between performances on tasks at different levels (see Table 4.6). To determine if differences were in the predicted direction (i.e., lower level tasks elicited higher scores for form than higher level tasks), Tukey *post hoc* tests were conducted. This analysis compared each level of task to

each of the task levels above it to determine if significant differences existed between mean form scores. Table 4.7 profiles these results.

Task 1, High Support Enactment, did not meet predictions, with nonsignificant score differences compared to any of the higher level tasks. Task 2, Picture Sequencing, did elicit greater language scores than three higher levels tasks (Task 3, 4, and 6) but was not significantly different from Story Retelling or Story Generation (Tasks 5 and 7), although the mean was higher. No significant differences in language form were found for Task 3, Low Support Enactment, or Task 4, Verbal Account, and higher level tasks. Task 5, Story Retelling, elicited a higher score form than Task 6, Group Routine, but a comparable score to Task 7, Story Generation. The Group Routine resulted in a predicted performance, with a very low score for form. Task 7, Story Generation, produced an unpredicted high score (the third highest mean).

Table 4.7
Tukey Post Hoc Results Comparing Mean Form Scores on Each
Representational Task to the Tasks Rated as Higher in Level on the SDS Model

	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Task 1	NS	NS	NS	NS	NS	NS
Task 2		*	*	NS	*	NS
Task 3			NS	NS	NS	NS
Task 4				NS	NS	NS
Task 5					*	NS
Task 6						*

Summary

The results of the analysis of verbal form did not indicate general support for the prediction that young children would produce utterances with less completeness and complexity as the representational level of tasks increased. Most comparisons were nonsignificant, indicating that the different tasks elicited a similar number of utterances and similar complexity in language forms. In general, language production was fairly low for all tasks. Unpredicted results were obtained for two tasks requiring story telling (Tasks 5 and 7), both of which resulted in high mean scores. Similarly, only moderate scores were obtained for tasks considered to be lower level, including Tasks 1 and 3. These results demonstrated a complex relationship between task demands and verbal performance.

Relationship between Level of Task Performance and Literacy Experience

The second question addressed the relationship between level of representational displacement on task performance and levels of literate language experienced in the home. Literate language or home literacy experience was measured by the subject's primary caretaker report on a Likert scale questionnaire for direct and indirect experience. It was hypothesized that children having higher levels of literacy experience in the home would be exposed to a form of culturally and linguistically exchanged and organized knowledge that would be positively correlated with performances on the seven representational tasks. It was expected that the greater the representational

demands, as predicted by the SDS model, the greater the effect of literate language experiences on task performance.

Subgroup Differences in Content and Form Scores across Tasks

Subgroups were formed to provide further insights regarding differences in performances across tasks. A total home literacy experience score was computed for each child subject by adding the direct and indirect literacy experience scores reported by each subject's caretaker in the telephone interview. The total scores for 12 subjects fell below 100 and total scores for 12 others fell above 130. Two groups of 12 subjects each were formed on the basis of these cut-off scores. The eight middle scores were considered average scores and were eliminated in further analyses so that the two groups would represent higher and lower than "average" scores on home literacy experience. The groups were termed Low Literacy Experience (LLE) and High Literacy Experience (HLE), although it is important to remember that these subjects were originally selected for the study because they were identified by the teacher as having average performance in their respective classrooms located within the small city's three elementary schools¹.

Differences in Subgroup Content Scores across Tasks

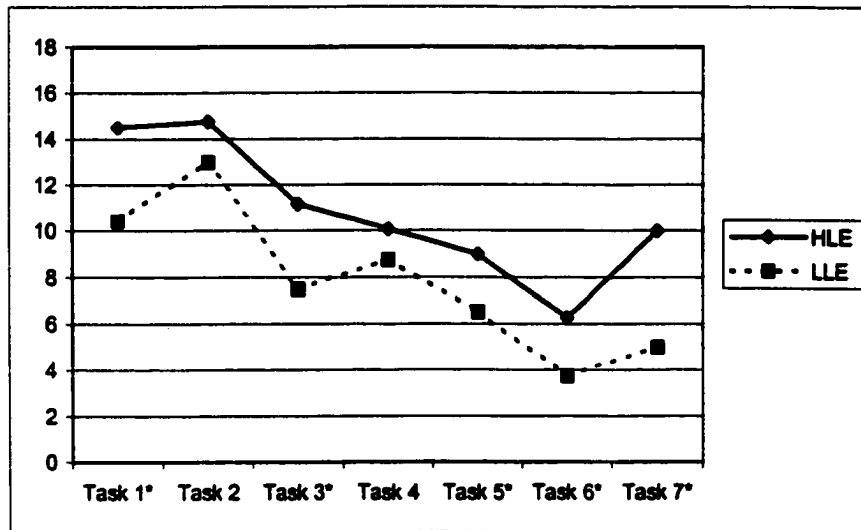
Means and standard deviations for the content scores on each representational task for the HLE and the LLE groups were calculated and results are presented in Table 4.8.

Table 4.8
Means and Standard Deviations for Content Scores of Low and High Literacy Experience Groups on Representational Tasks 1-7

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
LLE Mean	10.42	13.00	7.50	8.75	6.50	3.75	5.00
SD	3.03	2.59	2.91	2.42	2.47	2.13	3.02
HLE Mean	14.50	14.75	11.17	10.08	9.00	6.25	10
SD	4.42	2.34	3.46	3.09	2.49	2.18	4.97

Tests for the simple effect of group were performed for each representational task using a one-way ANOVA. This procedure revealed significant differences between The HLE and LLE group scores. The mean content scores for the HLE group are always higher than that of the LLE group across all task levels. No group-by-task interaction indicates that the relationship between group and score is the same at all levels of task. This is graphically illustrated in figure 4.1 where significant differences in mean content scores for the HLE and the LLE groups are indicated.

Significant differences between group scores were found on Task 1, High Support Enactment. This indicates that the LLE group provided fewer events from the bedtime routine when given props in Task 1, High Support Enactment. For Task 2, Picture Sequencing, the support provided by the photographs of familiar events from the bedtime routine helped the LLE group to organize the routine more than did physical props. In contrast, the pictures did not allow for as much improvement in performance for the HLE group and the two means are more similar on Task 2. In Task 3, Low Support Enactment,



* Indicates there is a significant difference in Task mean scores between the two groups.

Figure 4.1
Task mean content scores for LLE and HLE groups

the LLE group experienced more difficulty in organizing the routine and scored significantly lower than the HLE group. The scores for the LLE and HLE groups were most similar for all tasks on Task 4, Verbal Account, although the HLE group performed higher. LLE scores went up from Task 3 to Task 4 while HLE scores went slightly down. Task 5, Story Retelling, required knowledge of story grammar elements and the HLE group performed significantly higher on this task. Task 6, Group Routine, required the subjects to create a group bedtime routine. Both groups earned the lowest mean content scores for Task 6 while the HLE group included more story grammar elements in their performances and again scored significantly higher. Task 7, Story Generation, required the subjects to generate a story that was a deviation from the regular bedtime

routine. Differences between the mean content scores for the groups were greatest on Task 7. Five subjects in the LLE group were not able to provide an initiating event or topic. All subjects in the HLE group provided an initiating event and included more story grammar elements in their performances.

Differences in Subgroup Form Scores across Tasks

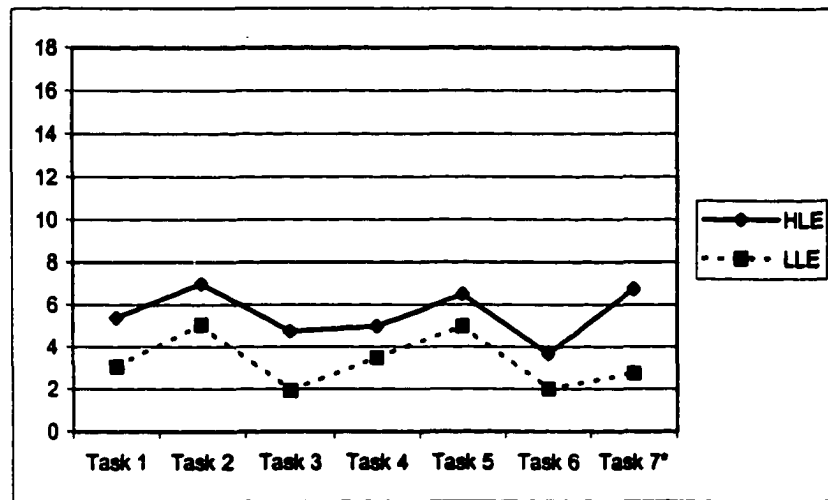
Means and standard deviations for the form scores on each representational task for the HLE and the LLE groups were calculated and results are presented in Table 4.9. Tests for the simple effect of group were performed for each representational task using a one-way ANOVA. Overall, form scores were fairly low with comparably high standard deviations.

Table 4.9
Means and Standard Deviations for Form Scores of Low and High Literacy Experience Group on Representational Tasks 1-7

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
LLE Mean	3.08	5.08	1.92	3.50	5.00	2.00	2.75
SD	2.94	3.45	1.92	2.50	2.22	2.09	1.66
HLE Mean	5.42	7.00	4.75	5.00	6.50	3.67	6.75
SD	5.14	6.35	4.39	3.69	2.39	2.50	4.47

The mean form scores for the HLE group are always higher than those of the LLE group across all task levels. No group-by-task interaction indicates that the relationship between group and score is the same at all levels of task. This

is graphically illustrated in Figure 4.2 where the significant difference in one mean form score for the HLE and the LLE group is indicated.



* Indicates there is a significant difference in Task mean scores between the two groups.

Figure 4.2
Task mean form scores for LLE and HLE groups

Form mean scores for both groups resulted in similar patterns although the LLE group always scored lower. Differences between groups were only significant for Task 7, the most decontextualized task. Both groups had less than predicted decreases in form scores across tasks. Additionally, both groups performed higher for form on Task 5, Story Retelling, than on Task 4. This finding is interesting in that the content scores between these tasks decreased while the form scores increased for this more decontextualized task.

Summary

The HLE group scored higher on all tasks, but the differences were not significant for content on Tasks 2 and 4. Both the LLE and the HLE groups showed a similar pattern of decreased content scores as tasks became more

displaced with the exception of the marked increases in scores for both groups on Task 7. Additionally, the differences between groups for content were greatest for Task 7, the most decontextualized task. Large between group differences for content were also found for Task 3, Low Support Enactment. The HLE group also earned higher form scores across all tasks, although only scores on Task 7 proved to be significantly different from the LLE group. Scores decreased in a more consistent pattern for both groups for content scores than for form scores and this finding was not predicted.

Content Score Correlations with Direct Literacy Experiences

For each subject, the content scores for each of the representational tasks were correlated with the corresponding Direct Literacy Experience (DLE) scores. DLE included book reading, counting or other mathematic experiences, computer programs involving literacy, writing activities, and other print or story related experiences. The resulting 7 correlations are profiled in Table 4.10.

Table 4.10
Correlations between Content Scores on Representational Tasks and
Caretaker Reports for Direct Literacy Experience in the Home.

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Direct literacy (n = 32)							
Pearson Correlation	.458(**)	.319	.406(*)	.292	.453(**)	.388(*)	.491(**)
Sig. (2-tailed)	.008	.075	.021	.105	.009	.028	.004

** Correlation is significant at the 0.01 level (2-tailed), * significant at the 0.05 level (2-tailed).

Significant correlations were found for all tasks except Task 2, Picture Sequencing, and Task 4, Verbal Account. That is, the greater the reported literacy experiences in the home, the higher the performance on five of the seven tasks. These results indicate that the content of the performance on enactments (high and low support) and story telling (retelling, generation, and school scenario) were reliably correlated with DLE. Tasks reflecting knowledge of the bedtime routine (i.e., sequencing pictures to reflect the routine and explaining to a puppet how to get ready for bed) maintained low correlations with DLE.

These results partially supported predictions made by the SDS model. The three highest levels of representational tasks (Tasks 5, 6, 7) were all significantly related to DLE and were among the highest correlations. One low level representational task (Task 2) had the lowest correlation with DLE, consistent with expectations. However, one of the highest correlations was obtained for Task 1, while Task 4, which was predicted to require greater literate language abilities, showed no significant correlation.

Content Score Correlations with Indirect Literacy Experiences

For each subject, the content scores for each of the representational tasks were correlated with the corresponding Indirect Literacy Experience (ILE) scores. ILE included talk about past and future events, topically related questions or other talk during daily events, engaging children in play, and other experiences that used language to explain and elaborate on events. The

resulting 7 correlations are profiled in Table 4.11. Results revealed that correlations for all tasks except Task 4, Verbal Account, were significant. That is, the greater the reported ILE at home, the higher the performance on six of the seven tasks. These results indicate that the ability to enact and talk about bedtime experiences across a continuum of tasks was reliably correlated with home experiences and the type of talk occurring during these experiences.

Table 4.11
Correlations between Content Scores on Representational Tasks and
Caretaker Reports for Indirect Literacy Experience in the Home.

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Indirect literacy (n = 32)							
Pearson Correlation	.438(*)	.386(*)	.474(**)	.331	.430(*)	.478(**)	.535(**)
Sig. (2-tailed)	.012	.029	.006	.064	.014	.006	.002

** Correlation is significant at the 0.01 level (2-tailed), * significant at the 0.05 level (2-tailed).

The only task reflecting a low correlation with ILE was explaining to a puppet how to get ready for bed (Task 4).

These results partially supported predictions made by the SDS model. The three highest level representational tasks (Tasks 5, 6, 7) were all significantly related to ILE and were among the highest correlations. One low level representational task (Task 2) had one of the lowest correlations with ILE experience, consistent with expectations. However, a higher correlation was obtained for Task 1, while Task 4, which was predicted to require greater

literate language abilities, showed no significant correlation. These findings paralleled those for correlations between content scores and DLE.

Form Score Correlations with Direct Literacy Experiences

For each subject, the form scores for each of the representational tasks were correlated with the corresponding Direct Literacy Experience scores. DLE included book reading, counting or other mathematic experiences, computer programs involving literacy, writing activities, and other print or story related experiences. The resulting 7 correlations are profiled in Table 4.12.

Table 4.12

Correlations between Form Scores on Representational Tasks and Caretaker Reports for Direct Literacy Experience in the Home

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Direct literacy (n=32)							
Pearson Correlation	.379(*)	.262	.407(*)	.394(*)	.418(*)	.421(*)	.573(**)
Sig. (2-tailed)	.033	.148	.021	.026	.017	.016	.001

** Correlation is significant at the 0.01 level (2-tailed), * significant at the 0.05 level (2-tailed).

Correlations were significant for all tasks except for Task 2, Picture Sequencing. That is, the greater the reported literacy experiences at home, the higher the performance on six of the seven tasks. These results indicate that the form of the performance on enactments (high and low support) and story telling (retelling, generation, and school scenario) were reliably correlated with DLE.

Tasks reflecting knowledge of the bedtime routine (i.e., sequencing pictures to reflect the routine) maintained low correlations with DLE.

These results partially supported predictions made by the SDS model. All tasks, except for Task 2, were significantly related to DLE with Tasks 4, 5, 6, and 7 consistently increasing in strength. One low level representational task (Task 2) had the lowest correlation.

Form Score Correlations with Indirect Literacy Experiences

For each subject, the form scores for each of the representational tasks were correlated with the corresponding Indirect Literacy Experience scores. Indirect experiences included talk about past and future events, topically related questions or other talk during daily events, engaging children in play, and other experiences that used language to explain and elaborate on events. The resulting 7 correlations are profiled in Table 4.13.

Table 4.13
Correlations between Form Scores on Representational Tasks and
Caretaker Reports for Indirect Literacy Experience in the Home

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
Indirect literacy (n=32)							
Pearson Correlation	.324(*)	.279	.505(**)	.346	.297	.550(**)	.552(**)
Sig. (2-tailed)	.070	.121	.003	.053	.100	.001	.001

** Correlation is significant at the 0.01 level (2-tailed), * significant at the 0.05 level (2-tailed).

Correlations were significant for four of the seven tasks (Tasks 1, 3, 6, and 7). That is, the greater the reported ILE in the home, the higher the performance on four of the seven tasks. These results indicate that the ability to enact and talk about bedtime experiences across a continuum of tasks was reliably correlated with home experiences and the type of talk occurring during these experiences. The tasks reflecting low correlations with indirect literacy experiences were Task 2, Picture Sequencing; Task 4, Verbal Account; and Task 5, Story Retelling.

These results partially supported predictions made by the SDS model but not as strongly as the correlations for form scores with DLE. The two highest-level representational tasks (Tasks 6 and 7) were significantly related to ILE and were the highest correlations. A lower level representational task (Task 2) had the lowest correlation with ILE, consistent with expectations. However, a higher correlation was obtained for Task 1, while Tasks 4 and 5, which were predicted to require greater literate language abilities, showed no significant correlation. These findings generally paralleled those for correlations with form scores and DLE.

Summary

Content correlations with DLE and ILE partially supported predictions made by the SDS model. The three highest level representational tasks were all correlated significantly with both DLE and ILE. The lower level Task 2 had lower correlations with both DLE and ILE. Higher than expected correlations were

found for Task 1. Task 4 was predicted to have significant correlations but none were found for both DLE and ILE.

Form correlations with DLE and ILE partially supported predictions but not as strongly as did those for content. Only Task 2 form scores were not significantly related to DLE and correlations for Tasks 4-7 consistently increased in strength. Four significant findings were found for form and ILE with the highest correlations resulting from the two highest level tasks. Task 1 had higher than expected correlations for both DLE and ILE.

Summary of Results

The first analysis to determine if the level of representational displacement of tasks affect the performance of prekindergarten children consistent with the SDS model. Results indicated general support for the prediction that young children would be able to provide more information related to the content of the bedtime event and more limited support for the prediction that they would produce utterances with more completeness and complexity for tasks rated as lower levels of the SDS model than for tasks rated as higher or more abstract. Unpredicted high results were obtained for both content and form on Task 7. Form scores deviated more from the prediction with only moderate scores for some tasks considered to be lower level, including Tasks 1 and 3 indicating a complex relationship between task demands and verbal performance.

The second analysis was to determine if the relationship between the level of representational displacement of tasks and the performances of

prekindergarten children, who differ in home literacy experience, for content and verbal form were consistent with predictions of the SDS model. Results were generally consistent with the model. The HLE group scored higher on all tasks with significant differences for 5 of the 7 tasks on content and on only one task for form. Content correlations with DLE and ILE partially supported predictions made by the SDS model. The three highest level representational tasks were all correlated significantly with both DLE and ILE. Content scores on the lower level Task 1 had unpredicted high correlations for both DLE and ILE. Form correlations with DLE and ILE partially supported predictions. Results for form and ILE showed stronger support for the predictions as correlations for Tasks 4-7 consistently increased. Task 1 had higher than expected correlations for form with both DLE and ILE.

Endnotes

¹ In the case of one Head Start classroom, the teacher refused to participate in the forced-choice procedure as she felt it was unnecessary. This teacher presented four signed consent forms to the investigator, stating that these were the only children whose parents had agreed to participation. When asked whether the children represented those with average classroom performance, the teacher insisted that they were all high on classroom performance. A decision was made to include these children in the study as the teacher went on to say that she had no average children in the class and that they were "all high" and the four subjects fell within the typical range on the TONI-2. Parent reports did not place any of these four children in the high literacy experience (HLE) group, although one child rated as average in another Head Start classroom was included in the HLE group as a result of the parent's report of home literacy experience. Also, a child rated as average in the Model Early Childhood program was included in the HLE group as a result of parent responses on the questionnaire.

DISCUSSION

This study examined the representational abilities of preschool-age children under seven different representational conditions. These conditions ranged from highly familiar and contextualized to unfamiliar or hypothetical and decontextualized conditions. The content and form of prekindergarten children's verbal and nonverbal behaviors, collected from performances on representational tasks, were examined. The levels of the SDS model were used to establish predictions regarding the relative representational difficulty of each of the conditions. Two hypotheses were proposed. First, it was predicted that the performances by prekindergarten children would reveal lower content and form scores as representational tasks increased in displacement. Additionally, a correlation was predicted to exist between the content and form of the child's representational performances and the child's direct and indirect literacy experience in the home. Home literacy experience was measured by responses from caretakers on a telephone questionnaire. This discussion will relate the results of this study to the theoretical basis for the hypotheses. First the two questions presented by the study are discussed in relation to the content of the child performances. Next, the results are discussed in relation to the form of the language used in the child performances and the study's two questions. This is followed by a presentation of the limitations of this study, the educational implications, and some suggestions for future research.

Differences in Content Performance across Representational Levels

The first question, in relation to content, was to determine if the content (i.e., information consistent with event structures and story structures) differed across representational tasks for prekindergarten children. Task conditions were designed to correspond to the Situational continuum of the SDS model, with the prediction that higher level and more decontextualized tasks would require greater processing demands and consequently lower performance on content than the lower level and contextualized tasks.

Content versus Levels of Representational Tasks

Content scores were the first measure used to determine if the contention that tasks differ in representational displacement was supported, and if the SDS model would predict which tasks would be higher or lower on the continuum. Results showed that the content scores followed the predicted pattern, with the exception of Task 7 that was predicted to be the most difficult. Content scoring reflected the information the child was able to provide, primarily in words but also in actions, that was consistent with the event or story structure. The content measures for each of the seven tasks relating to events and stories were based on a potential of 3 points for each of 8 categories of information. Only the three lowest tasks had the potential for earning points for actions or gestures, since these were the tasks that were supported by props and pictures. The five higher tasks (Tasks 4 - 7) all required that the content be recalled and expressed entirely in words. One point was awarded for including one or more elements for each of 8 event categories, and one additional point

could be earned for elaboration of an element. Thus each task had a potential score of 24 points.

The results of the analysis for content are discussed for the entire pool of 32 subjects. Also considered are comparisons between the subgroup of 12 children ranked as having the highest literacy experiences at home (HLE) according to parent responses to questionnaires, and the subgroup of 12 children ranked as having the lowest literacy experience (LLE).

Contextualized Tasks

When the total group was considered, performances on Task 1, High Support Enactment, and 2, Picture Sequencing, were not different from each other. Both of these tasks did include significantly more information than any of the higher level tasks. The SDS model predicted this outcome. These are the two most contextualized tasks, meaning that information needed to remember and express the content of the bedtime event was present in the physical props (Task 1) and the pictured actions (Task 2). Children were less likely to forget to include information because of the visual prompts present in the supporting materials. These tasks also were considered easy because they involved understanding of the content of a home routine that they engaged in daily. In Task 1, they performed the routine with props, simulating the actions they did at home. In Task 2, they only needed to recognize that the pictures represented actions similar to their own.

The mean score of Task 2, although not statistically different from Task 1, was 1 point higher. When the means for the high and low literacy groups

were considered, this result was related to the performance on Task 1, High Support Enactment by the LLE group. The LLE group performed significantly lower than the HLE group on this task. The LLE subjects had greater difficulty enacting the bedtime routine than their peers (although it was still their second highest performance). In contrast, the LLE group performed comparably to the HLE group for Task 2, Picture Sequencing. This indicated that the greater context provided by the photograph pictures (i.e., an actual bathroom and bedroom, pictures of children actually engaged in the actions) helped to structure the routine and provided information to talk about. The enactment with props required the children to use words to create or imagine many of these scenes and actions. Children with HLE were better able to use representational abilities to enact the routine.

The design of the Picture Sequencing task also contributed to this deviation from the SDS prediction. The original task for the pilot study required the child to sequence 8 picture cards, parallel to the task of using the 8 props in sequential order in Task 1. However, this proved to be too difficult for children in the pilot study who resorted to random ordering of the cards. Cards presented in sets of 4, consistent with the memory span expected for this age (Anderson, 1995) were sequenced with much greater accuracy. This procedure seemed appropriate at the time the actual data was collected, but results showed that pictured events could be easily sequenced in these small sets and that the pictures enabled most children to include more events than they could include from the presence of props only in Task 1. In future studies, either pictures of

the props, or a single complex picture that required interpretation of the event in sequence may be a better comparison of performance across these two levels.

The last contextualized task, Low Support Enactment (Task 3) required the children to represent the routine event when given only 3 props (i.e., a miniature doll, a miniature bar of soap, and a miniature blanket). As predicted by the SDS model, the mean scores dropped by 4 points, which was significant. The reduction in contextual support did result in a reduction in the amount of information that could be provided about the bedtime routine. This effect was greater for the group of children with the lowest literacy experiences (LLE) at home than for the children with the highest literacy experiences at a level that reached significance (7.5 compared to 11.2 points, respectively). Reenacting a routine using words supported by minimal prompts was a particularly difficult task for LLE subjects.

Analysis of task protocols showed that the LLE subjects, to a greater degree than the HLE subjects, limited the content they enacted or talked about to the three props provided. Few of the subjects elaborated on the event beyond the cues that were visually present. In contrast, many of the HLE subjects either used language to talk about other actions within the routine or asked for additional props (i.e., "Where is the bathtub?" "Do you have a bed?"). This pattern of response differences between the HLE and LLE was similar to the differences seen in the High Support Enactment (Task 1). Since enactment is closely related to play, these consistent findings support previous studies that found differences in representational play actions between cultural groups

(Blank, Rose, & Berlin, 1978; Heath, 1982). The two groups primarily represented the middle SES and lower SES groups (see scores in Appendix I)

Decontextualized Tasks

The 5 higher level tasks were all decontextualized, meaning there was no support for the task in the form of props or pictures. All information had to be remembered and given using language. The language was required to function to recreate past events (Tasks 4 and 5), or to create imagined unexperienced events (Tasks 6 and 7). Two of these decontextualized tasks focused on event routines (Tasks 4 and 6), while two others required recalling and generating narratives (Tasks 5 and 7).

Task 4, Verbal Account, differed from Task 3, Low Support Enactment, primarily in the absence of even minimal props. The children were instructed to explain the bedtime routine to a puppet. Performance on Task 4 was comparable to Task 3 (i.e., 9.8 vs 9.4, respectively) resulting in no significant task differences. When the means for the HLE and the LLE groups were considered, the groups performed comparably, with no significant difference between group scores. These results indicate that both groups experienced more difficulty with this decontextualized task than the lowest level contextualized tasks (Tasks 1 and 2 for both groups, and Task 3 also for the HLE group). The LLE group did perform slightly better on this task than the low support enactment, but this finding was due to the significantly low performance on the enactment task as discussed above.

Task 5, Story Retelling, was the first narrative task. This task was expected to be more difficult than enacting or describing a routine because of the representational difficulty of narrative thought and language. To retell a narrative, children must recognize the underlying routine event and then become aware of the deviations from the routine that make it unusual or problematic. These deviations are related to important elements of story structure such as the problem, the plan to resolve it, the attempt, and the outcome or consequence of the action. The content score was dependent on retelling these critical elements after the examiner read and then removed an illustrated storybook.

The total group performance for the Story Retelling task was significantly lower for content provided than the Verbal Account, as predicted by the SDS continuum. Similarly, the means for both the HLE and the LLE groups were lower for Story Retelling than for Verbal Account. This finding supports the theoretical contention that narrative is a more difficult mode of thinking and talking about experience (Applebee, 1978; Pellegrini, 1986; Peterson, Jesso, & McCabe, 1999). The theoretical role of literate language experiences in acquiring narrative thought and language also was supported by the comparison of groups. The HLE group scored nearly 4 points higher than the LLE group on this task, a difference that was significant.

Task 6, which required the children to imagine a bedtime routine for children who were stranded at school (Group Routine) was predicted to be more difficult than Story Retelling. The storybook reading created and

organized the imaginary event for the children, who then had to remember and retell this vicarious experience. The Group Routine scores on Task 6 were the lowest for the whole group as well as for the two groups, consistent with predictions of the SDS model. The effects of task difficulty were greatest for the LLE group who were awarded only 3.8 points compared to 6.3 for the HLE group, a difference that was significant. The difficulty of this task for all of these young subjects is reflected in these scores. Out of a possible 24 points, only a group mean of 5 was earned. This is in contrast to the group means of approximately 13 points for Tasks 1 and 2. The progressively lower content scores as the representational displacement of the tasks increased is clearly reflected in the performances of the whole group and both the HLE and LLE groups across the first 6 tasks.

Task 7, Story Generation, required the children to generate a story from a story starter about one night when it was time for a little boy or girl to go to bed. Subjects were told that made up stories could be funny or scary or sad, and then were encouraged to tell their story. It was predicted that the narrative demands of this task would make it more difficult than generating a routine. However, this prediction was not met. Children performed comparably on this story task to the Story Retelling (Task 5). The topics of these stories had common themes across many subjects, and included common characters such as monsters and ghosts. Many of these themes are consistent with bedtime fears and nightmares, as well as stories told to them by others or watched on television or movies.

Once again group differences were found for literacy experience. The HLE mean score of 10.0 was twice as large as the LLE mean of 5.0. These differences were significant. The high literacy group was able to include twice as many story elements in their invented stories, reflecting a better understanding of how to structure and tell a story in traditional Western story form. But even for the LLE group, performance on the Story Generation task was better than for the Group Routine task.

Summary

The analysis of the content of information provided by children for the seven tasks supported the predictions of the SDS model. In some cases task demands limited or enhanced task performances in ways that resulted in nonsignificant differences between tasks next to each other on the continuum, but the continuous progression toward decreasing performance as the task demands increased was maintained. The Story Generation task deviated most notably from this pattern, with a score higher than the Group Routine task predicted to be easier and comparable to the Story Retelling task. Because bedtime themes are very familiar to children, this topic may not have been as challenging as a novel topic, or children may have told a story similar to one they had seen or been told, thus making it a retelling. Further investigation of these possibilities is warranted.

When groups were formed based on literacy experience, significant performance differences were found for the two enactment tasks, the two narrative tasks, and the group routine. Only the picture sequencing and verbal

account elicited similar amounts of information for both groups. To further explore the relationship between literacy experience and performance across different levels of tasks, tests of correlation were conducted.

Content versus Literacy Experience

The first question addressed whether differences existed between representational tasks and whether the continuum suggested by the SDS model would predict these differences. The second question explored the relationship between literacy experience and task performance. A preliminary answer to this question was obtained by forming groups and comparing means across task conditions. These results were described above, where a relationship between home experience and task performance was demonstrated. To better explore the nature of these differences, all of the subjects' performance scores were correlated with both Direct Literacy Experiences (DLE) and Indirect Literacy Experiences (ILE) in the home. Significant correlations supported the hypothesis that literacy experience does affect representational ability, and that children with greater literacy experience are correspondingly better at providing relevant information.

Direct Literacy Experiences

Direct Literacy Experiences included activities such as storybook reading in the home, attention to print in the environment, opportunities to write and draw, alphabet or number activities, and other exposures to print and literacy. Significant correlations between DLE and task performances were obtained for all tasks except Task 2, Picture Sequencing, and Task 4, Verbal Account. As

predicted, three of the highest correlations were obtained for the tasks shown to be most difficult in representational displacement (Tasks 5, 6 and 7). That is, children with relatively more direct literacy experience performed better on story telling and generation of a routine than children with fewer direct experiences. This finding was not surprising in that the ability to tell stories and to include relevant information is culturally learned by listening to and being assisted to tell well-formed stories. Children who experience more frequent parent-child storybook reading or opportunities to write (pretend or dictated) would be expected to have a better developed event structure for these tasks (Nelson, 1996). Indeed, the two storytelling tasks (Tasks 5 and 7) produced two of the highest correlations, with the Story Generation task exhibiting the most predictable relationship of all tasks.

The remaining significant correlations were for the two enactment tasks (Tasks 1 and 3). Analysis of mean scores had suggested that these tasks were similar to symbolic play and that literacy experience did affect performance. The correlations supported these conclusions. The task most like play, High Support Enactment, yielded the second highest correlation among the tasks. That is, children with HLE knew what to do with the props and were able to produce a logical action sequence in actions and words. Conversely, children with LLE were less successful at pretending to enact the bedtime routine. When the number of props decreased a significant but lower correlation was obtained. The task was more difficult and even children with substantial literacy experience were less successful at using symbolic objects to model the routine.

The Picture Sequencing task (Task 2) was not reliably related to DLE, although it did approach significance ($p = .07$). Photographs appeared to be familiar to all of the children and they were able to recognize the pictured actions. When the complexity of the task was reduced by limiting the pictures presented, most children were successful at ordering and explaining the basic events. Even so, the near significant result suggested that literacy experience does affect this representational task and that a slightly different task design may have elicited higher correlations.

The task most unrelated to DLE was Task 4, Verbal Account. Most of the children were able to tell the puppet relevant information about the bedtime routine and were motivated to talk to him. These results suggest that the ability to tell about your own routine experience in words is less dependent on direct literacy experiences than the storytelling or enactment tasks that presented more representational demands. Additionally, this routine is likely to include more equal amounts of adult language mediation as most young children need direction to complete the routine.

Indirect Literacy Experiences

Indirect Literacy Experiences (ILE) included talk about photographs, events from the past, organization or categorization of household items during chores, use of time words such as yesterday and tomorrow, and symbolic play experiences. These types of literacy experiences teach a child how to exchange, organize, and refer to experiences using language and symbolic objects. Although these activities do not directly address storybook reading or

writing, they do require children to use language in ways consistent with literate language. That is, the language is decontextualized from ongoing actions, it creates an imaginary future or reflects on and reinterprets the past, and it demands that referents such as people, places or objects are clearly established using words. All tasks in the study were significantly correlated with ILE with the exception of the Verbal Account (Task 4).

Consistent with the DLE results, the three highest tasks (Tasks 5, 6 and 7) were highly correlated with ILE. Interestingly, the highest correlation overall was achieved for ILE and Task 7, Story Generating. This suggests that children with limited ILE could not invent a story, while those with high frequency ILE were successful. In fact, this measure of literate language resulted in a higher correlation with story generation than direct experiences. Perhaps lower amounts of ILE results in less world knowledge from which to draw from in creating a story.

Summary

The analysis to determine the relationship of the content of information, provided by children for 7 tasks, with the amount of direct and indirect home literacy experience supported the predictions of the SDS model. The higher level tasks (Tasks 5, 6, and 7) were highly correlated with DLE and ILE. The two highest level tasks (Tasks 6 and 7) were also highly correlated with ILE. This finding suggests that the effects of literacy experience for content are strongly evident by prekindergarten age. Overall, ILE correlated significantly with 6 of the 7 tasks while DLE was significantly correlated with 5 tasks. Task 4

had a nonsignificant correlation with both DLE and ILE which suggested that language used to report the frequent bedtime routine, a routine directed by similar parent language (e.g., *take off your clothes, get in the tub, wash up, etc.*), was less dependent on overall home literacy experience.

Differences in Form Performance across Representational Levels

In addition to analysis of content scores, the first question was also to determine if the verbal form (i.e., MLU, syntactic completeness and complexity) differed across representational tasks for prekindergarten children. Task conditions were designed to correspond to the Situational continuum of the SDS model, with the prediction that higher level and more decontextualized tasks would require greater processing demands and consequently lower performance on form than the lower level and contextualized tasks.

Form versus Levels of Representational Tasks

Form scores were the second measure used to determine if the contention that tasks differ in representational displacement was supported, and if the SDS model would predict which tasks would be higher or lower on the continuum. Results showed that the form scores followed the predicted pattern in a similar but less reliable way in comparison to the content scores. Scoring reflected the form of the language used by the child in providing event or story structure elements (content). The form measures for each of the seven tasks relating to events and stories were based on a potential of 3 points for each of 8 categories of information. One point was awarded for a T-unit that contained 5 words or more (in accordance with MLU for the age group). A second point was

awarded for a T-unit that was a complete sentence according to the dialect spoken by the child. A third point was awarded for production of a complex T-unit, defined as a compound sentence or an embedded structure. Thus each task had a potential score of 24 points. The mean form scores were very low and standard deviations were high. Children produced very few complex sentences and many were incomplete or below the MLU of five words. As only one sentence was selected from each event or story element category, a child who produced many complete sentences in one category received the same credit as those who produced only one. This limitation is presently viewed as having influenced the low scores. However, the procedure was applied equitably across all subjects and findings can provide some insights, although few significant results were obtained.

The results of the analysis for form are discussed for the entire pool of 32 subjects. Also considered are comparisons between the subgroup of 12 children ranked as having the highest literacy experiences at home (HLE) according to parent responses to questionnaires, and the subgroup of 12 children ranked as having the lowest literacy experience (LLE).

Contextualized Tasks

When the total group was considered, performances on Task 1, High Support Enactment, and 2, Picture Sequencing, were not different from each other. The SDS model predicted these scores to be higher on the two most contextualized tasks but only scores for Task 2 were higher than all others with Task 1 having fourth highest. The lower scores on Task 1 can be explained by

need to communicate less information verbally as much was contextually shared by the speaker and listener. On Task 1, the children had to verbally provide information about the event depicted in the sequence cards. The mean score of Task 2, although not statistically different from Task 1, was more than 1 point higher indicating that visual depictions of the event helped children to use higher syntactic forms. The form scoring procedure as well as the design of the Picture Sequencing task, previously discussed in relation to content scores, is also believed to have contributed to the deviation from the SDS prediction. When the means for the high and low literacy groups were considered, the results were not significant for Task 1 or Task 2 with about two points difference between the two groups on both tasks. The enactment with props required the children to use words to create or imagine many of these scenes and actions. Children with HLE were better able to use representational abilities to enact the routine as well as to use better syntactic forms.

The last contextualized task, Low Support Enactment (Task 3) required the use of minimal and miniaturized props. As predicted by the SDS model, the mean scores dropped by almost 3 points, which was significant. The reduction in contextual support did result in a reduction in the completeness and complexity of syntactic forms. This effect was greater for the group of children with the lowest literacy experiences at home than for the children with the highest literacy experiences (drop in points was 3.16 for LLE compared to 2.25 drop for HLE) although the level did not reach significance. Results do suggest that supplying verbalizations as well as enacting a routine when supported by

minimal props was a more difficult task for LLE subjects. Few LLE subjects elaborated on the event and were limited to the activities related to the few props provided while many of the HLE subjects used language to communicate other actions with objects within the routine. In Task 1, High Support Enactment, the LLE group provided less completeness or complexity using life-size props again indicating differences in representational play between groups differing in home literacy experience.

Decontextualized Tasks

The five higher level tasks were all decontextualized, meaning there was no support for the task in the form of props or pictures. All information had to be recalled and expressed verbally to recreate past events (Tasks 4 and 5), or to create unfamiliar imaginary events (Tasks 6 and 7). Two decontextualized tasks focused on event routines (Tasks 4 and 6) and two required recalling and generating narratives (Tasks 5 and 7).

In Task 4, Verbal Account, children were instructed to explain the bedtime routine to a puppet who wanted to go to bed like a child. Performance on Task 4 was higher but comparable to performance on Task 3 with less than one point difference resulting in no significant task differences. When the means for the two groups were considered, there was no significant difference between group scores although the HLE scores were higher (5.0 vs 3.5). Both groups had increases from Task 3 but the difference was greater for the LLE group (from 1.92 to 3.5 for LLE and 4.75 to 5.0 for HLE). This may have

resulted from more equal amounts of experience with adult language routinely used to direct the bedtime routine.

The first narrative task (Task 5, Story Retelling) was expected to result in less syntactic form ability. The content score was dependent on retelling the critical elements of a story after the adult read an illustrated storybook. Interestingly, the total group performance for the Story Retelling was significantly lower for content provided than the Verbal Account, as predicted by the SDS continuum; however, the form scores increased although not significantly. So as children were able to recall less content in this task, the content that they did recall included more "book-like" or literate language. This may have resulted from holding text from the storybook in short-term memory when giving the performance immediately after reading the story or from school as well as home experience with book reading. The LLE group scored 1.5 points lower but the difference was not significant.

Task 6, which required the children to imagine a bedtime routine for children who were stranded at school (Group Routine) was predicted to be more difficult than Story Retelling. The scores on Task 6 were the lowest for the whole group as well as for the two groups, consistent with predictions. The effects of task difficulty were greatest for the LLE group who were awarded only 2.0 points compared to 3.67 for the HLE group, but this difference was not significant. The decontextualized Task 6 resulted in form (as well as content) scores reflecting that it was the most difficult and most unfamiliar task of all.

In the Story Generation task (Task 7) children were asked to generate a story. It was predicted that the narrative demands of this task would make it more difficult than generating a routine. Mean scores for the whole group indicated unpredicted performances that compared to performances on the other story task, Story Retelling (Task 5). The topics of the stories produced had common childhood themes related to bedtime or nighttime fears. When group differences were examined the Task 7 HLE mean score of 6.75 was more than twice as large as the LLE mean of 2.75. These differences were the only significant findings between groups for form scores. The HLE group also included significantly more content and provided it with better form or more literate style language. The performance of the LLE group on Task 7 was only slightly better than their performance on Task 6, Group Routine (2.75 versus 2.0), indicating that more home literacy experience supported the use of more decontextualized or literate language.

Summary

The analysis of the form of child performances on the 7 representational tasks partially supported the predictions of the SDS model. In some cases, task demands limited or enhanced task performances in ways that resulted in nonsignificant differences between tasks next to each other on the continuum and a consistent decrease in scores was not found.

When groups were formed based on literacy experience, significant performance differences were found for only the most decontextualized task, pointing to the importance of social mediation in developing language skills

necessary for classroom learning. The Story Generation task again was most notably different from the predicted pattern, with the HLE group having a large increase in scores. This was the only task that had significantly higher scores than the LLE group for form. Again, it seems likely that this task was more familiar and common to actual child experiences, especially for the HLE group who had increased levels of experience with storybooks and with personal narratives. Further investigation using less routinely experienced events as a basis for the deviation condition such as going to the grocery may result in different findings. To further explore the relationship between literacy experience and performance across different levels of tasks, tests of correlation were conducted.

Form versus Literacy Experience

The second question explored the relationship between home literacy experience and task performance. A preliminary analysis for answering this question was obtained by forming the HLE and LLE groups and comparing their mean scores across task levels. These results were described above, and demonstrated a relationship between home experience and task performance: however, significant findings were found only for the most decontextualized task. To explore the nature of these differences more fully, all of the subjects' performance scores were correlated with both Direct Literacy Experiences (DLE) and Indirect Literacy Experiences (ILE) in the home. Significant correlations supported the hypothesis that literacy experience does affect representational ability, and that children with greater literacy experience are

better at providing relevant information with more completeness and complexity in form. The correlations revealed more significant findings than were revealed through comparisons of the numerically lower form scores of the HLE and LLE groups.

Direct Literacy Experiences

Direct Literacy Experiences related to storybook reading in the home, attention to print in the environment, opportunities to write and draw, alphabet or number activities, and other exposures to print in the environment. Significant correlations between DLE and linguistic forms of child performances were obtained for all tasks except Task 2, Picture Sequencing. The three highest correlations were obtained for the most difficult representational displacement tasks (Tasks 5, 6 and 7) and correlations for Task 4 through Task 7 consistently increased in strength. Therefore, children with relatively more DLE used better verbal form in their performances on higher representational tasks than children with fewer direct experiences. This was predicted as the ability to tell stories and to include relevant information is culturally learned by listening to and participating in storytelling events at home. DLE predicted performance on the Story Generation task better than all the other tasks and this was an expected finding.

The Picture Sequencing task (Task 2) was the only nonsignificantly correlated task. Performances using pictured events in small sets of four photographs was not reliably correlated with DLE. Again, the complexity of the task was reduced by dividing the number of pictures presented into two sets,

most children were successful at ordering and explaining the basic events and a slightly different task design may elicit higher correlations.

Indirect Literacy Experiences

Indirect Literacy Experiences (ILE) included talk about photographs, events from the past, organization or categorization of household items or chores, use of time words such as yesterday and tomorrow, and symbolic play experiences. ILE facilitates children to use language and symbolic objects to exchange, organize, and refer to experiences. That is, this experience supports the use of decontextualized or literate language. Four tasks in the study were significantly correlated with ILE.

The two highest tasks (Tasks 6 and 7) revealed the highest correlations with ILE. Interestingly, the highest correlation overall was again for Task 7, Story Generation as was the highest correlation for DLE. This suggests that children with limited ILE had more difficulty using the verbal forms required for the most decontextualized task, while those with high frequency ILE could use more decontextualized language. The third highest correlation was found for Task 3, Low Support Enactment, indicating that greater experience with language relating to decontextualized events, organizing the environment, and time concepts helped children to symbolically represent more information using language when enacting with few miniaturized symbolic objects. Task 1 was also significantly correlated with ILE but this was the lowest of the 4 significant correlations for form and ILE and was consistent with the SDS model. However, this finding did indicate a relationship between ILE and symbolic play abilities.

Summary

Results of the analysis to determine the relationship of the verbal form, in the performances by children on the representational tasks, with the amount of direct and indirect home literacy experience partially supported the predictions of the SDS model. The higher level tasks (Tasks 6 and 7) were highly correlated with both DLE and ILE. As with the content and literacy experience correlations, the highest correlations for Task 7 and both DLE and ILE indicate the effects of literacy experience for form. Overall, DLE correlated significantly with 6 of the 7 tasks while ILE was significantly correlated with 4 tasks. Task 2 had a nonsignificant correlation with both DLE and ILE which suggested that amount of home literacy experience does not reliably predict language used to describe small sets of pictured events from a highly familiar routine.

Limitations of the Study

The greatest limitation of the study is the small sample size as it does not allow for generalizations to the larger population of prekindergarten children. Despite the increased statistical power of the repeated measures ANOVA statistical test, it is still possible that the small sample size caused a Type II error. A related limitation was that only children considered by their teachers to be average in classroom performance were selected as subjects, with the exception of one teacher who found all her students to be high in classroom performance (but who all scored within the average range on the TONI-2). Selecting subjects judged as average on classroom performance was viewed as a procedure to eliminate the confounding effects of high IQ. Results for a

larger and randomly selected sample to include representatives from varying socioeconomic groups as well as from a larger geographical area may yield different results.

The study was also limited by the difficulty in designing Task 2 as discussed earlier. Better design of this task might show a decrease between Task 1 and Task 2 scores instead of the unpredicted increase. Also, the presentation of tasks that were situationally familiar with situationally unfamiliar tasks may have confounded results. Task 7 was predicted to be the most difficult but results showed that it was not and perhaps was a culturally and psychology familiar theme for young children. Greater understandings regarding the situational effects for familiar tasks as well as methods to determine a child's situational familiarity with tasks are needed to present tasks based on less frequent but equal amounts of past experience.

Another limitation may have been the procedure designed to parallel content and form scoring while also being uniformly applicable across all task levels. Points could be earned for form only within a content category that received credit and was based on the one most complete or complex T-unit provided in the category even though similar T-units completeness or complexity were provided in the same category. It is possible that a form scoring procedure that was independent from the content scoring would better represent abilities related to linguistic form.

Educational Implications

This study, while having limitations, does have implications for early childhood education. While correlations have been found to exist between decontextualized language and school achievement (Miller, 1990; Snow & Dickinson, 1990; Snow & Tabors, 1993; Crais & Lorch, 1994), the cognitive processes that constitute this relationship have not been well understood. This preliminary study predicted differences in performances on representational tasks across levels of displacement and correlations between performance scores and reports for home literacy experience. While all findings did not fall in the predicted pattern, they were largely explained by the elicitation conditions without conflicting with the theoretical perspectives for the study. Findings do suggest that higher displacement in representation is dependent upon frequent and interactive experience with decontextualized language. This cognitive displacement is necessary for success in formal education as pedagogical methods employ the use of decontextualized language. The SDS model provides a framework for understanding development along a continuum from highly contextualized to highly decontextualized levels.

This study further suggests that performances along this continuum are also influenced by situational familiarity with the context, so that children can represent information at higher levels of displacement under certain familiar conditions where repeated exposure to particular uses of decontextualized language has mediated experience such as in Task 7. However, greater amounts of caretaker language used in mediating many types of child

experiences appears to result in greater child facility with decontextualized language under a wider variety of conditions. This experience appears to facilitate the development of representational thought across levels of displacement.

Recognizing the importance of preschool experience with decontextualized language to develop displacement in thought is important in designing programs for preschool age children. The increased effectiveness of instructional practice based on a model of language development from contextualized to decontextualized levels such as the SDS model should improve the quality and effectiveness of early education programs. Frequently engaging young children with appropriate levels of language during activities is crucial to developing the levels of cognitive displacement necessary for formal learning at school age. Additionally, intervention programs for low SES parents and children might be improved if caretakers were supported in their efforts to provide more opportunities for displacement of linguistic symbols from their referents to occur. Activities reflecting appropriate SDS levels for the child's current age and functioning could be modeled for caretakers. Support could be provided at appropriate sites in parent-child interactions to facilitate acquisition of practices that promote use of decontextualized language to displace thought or to acquire literacy skills. This intervention is needed at birth and even before to encourage early parental use of language for engaging infants in turn taking activity. As this study indicates, significant differences in representational abilities are developed by entrance into prekindergarten. Parent intervention is

crucial for children from many lower SES families to experience home literacy experience to have equity with their middle SES peers.

While appreciation for cultural and linguistic diversity continues to increase in schools, educational achievement continues to be based on abilities to perform successfully on decontextualized tasks. Cultural groups relying more on contextualized language for daily communication might find ways to preserve socio-cultural traditions while incorporating the use of greater amounts of decontextualized language in child rearing practices. As all cultural groups modify their practices in adapting to new situations in each succeeding generation, the use of more decontextualized language to mediate child activities can be viewed as an adaptation that will increase future access to the social and economic privileges of the literate culture.

Future Research

The findings of the study suggest several directions for future research. First, investigations to clarify the effects of situationally familiar task conditions on content and form of performances is needed. Even as many unpredicted results of this study could be explained by situational familiarity with the task conditions, this phenomenon confounds a study to discern how displacement in representation develops. Tasks might be designed for each level to reflect both familiar and less familiar events such as a check-up at a doctor's office where number of prior visits could be documented. The performances could be compared to help discern the effects of situational familiarity on performance.

Investigations are also needed to further understand and predict the effects of decontextualized conditions on content and form scores. In these higher level tasks, content must be made more explicit with more complete or complex form, as there is no information in the immediate context to support the communication. Therefore, children capable of representing information at more decontextualized levels would be expected to have less decrease and possibly some increases in scores across tasks. Further research might establish predictions relative to the effects of employing decontextualized language in higher level tasks. This might be possible by studying samples of older subjects as well as younger subjects on the same tasks in order to understand how younger subjects differ in performances on representational ability across levels of displacement.

Improved scoring procedures for verbal form in performances may be developed for future studies. The complexity of early representational and linguistic abilities makes development and implementation of scoring procedures most challenging. However, continued development of computer technology for analysis of language samples may possibly assist future researchers in scoring.

Finally, Norris and Hoffman's SDS model and Nelson's experiential theory offer important theoretical frameworks for future research for expanding current knowledge of language in cognitive development. While incorporating both Piagetian and Vygotskian theories, these frameworks provide greater clarity in explaining development. Further integration of these theoretical

perspectives with further development of connectionist models, as was initiated by Norris and Hoffman (in press), may provide even stronger theoretical frameworks for understanding the complex development of human representational intelligence.

REFERENCES

Anderson, J. R. (1995). Cognitive psychology and its implications (4th Ed.). New York: W. H. Freeman.

Anderson, N. & Cuneo, D. (1978). The height + width rule in children's judgement's of quantity. Journal of Experimental Psychology: General, 107, 335-378.

Andrews, P. (Ed.). (1991). Louisiana Head Start curriculum guide for teachers of young children. Baton Rouge: Louisiana Resource Coordination Project and the Louisiana Head Start Association.

Applebee, A.N. (1978). The child's concept of story. Chicago: University of Chicago Press.

Baillargeon, R. (1987). Object permanence in 3½- and 4½-month-old infants. Developmental Psychology, 23, 655-664.

Baillargeon, R. & DeVos, J. (1991). Object permanence in young infants: Further evidence. Child Development, 62, 1227-1246.

Blank, M. Rose, S., & Berlin, L. (1978a). The language of learning: The preschool years. New York: Grune and Stratton.

Blank, M. Rose, S., & Berlin, L. (1978b). The preschool language assessment instrument. New York: Grune and Stratton.

Borke, H. (1975). Piaget's mountains revisited: Changes in the egocentric landscape. Developmental Psychology, 11, 240-243.

Bredenkamp, S. (Ed.). (1987). Developmentally appropriate practice in early childhood programs serving children from birth through age 8 (Exp. Ed.). Washington, DC: National Association for the Education of Young Children.

Britton, J. (1970). Language and learning. London: The Penquin Press.

Britton, J. (1982). Writing to learn and learning to write. In G.M. Pradl (Ed.), Prospect and retrospect: Selected essays of James Britton (pp. 94-111). Montclair, NJ: Boyton/Cook.

Brown, R. (1973). A first language: The early stages. Cambridge, MA: Harvard University Press.

Brown, L., Sherbenou, R.J., & Johnsen, S.K. (1990). Test of nonverbal intelligence: A language-free measure of cognitive ability (2nd Ed.). Austin, TX: Pro-Ed.

Bruner, J.S. (1964). The course of cognitive growth. American Psychologist, 19, 1-15.

Bruner, J.S. (1986). Actual minds. possible worlds. Cambridge, MA: Harvard University Press.

Bruner, J. & Feldman, C. (1996). Group narrative as a cultural context of autobiography. In D. Rubin (Ed.), Remembering our past: Studies in autobiographical memory (pp. 291- 317). Cambridge, England: Cambridge University press.

Bruner, J., Olver, R., & Greenfield, P. (1966). Studies in cognitive growth: A collaboration of the center for cognitive studies. New York: John Wiley and Sons.

Clark, E.V. (1973). What's in a word? On the child's acquisition of semantics in his first language. In T.E. Moore (Ed.), Cognitive development and the acquisition of language. New York: Academic Press.

Craig, H.K. & Washington, J.A. (1995). African American English and linguistic complexity in preschool discourse: A second look. Language, Speech, and Hearing Services in Schools, 26(1), 87-92.

Crais, E. & Lorch, N. (1994). Oral narratives in school-age children. Topic in Language Disorders, 14, 13-28.

Dickinson, D. (1991). Teacher agenda and setting: Constraints on conversation in preschools. In A. McCabe & C. Peterson (Eds.), Developing narrative structure (pp. 225-302). Hillsdale, NJ: Lawrence Erlbaum, Inc.

Dickinson, D. & Smith, M. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. Reading Research Quarterly, 29(2), p. 105-122.

Dickinson, D. & McCabe, A. (1991). A social interactionist account of language and literacy development. In K. Kavanaugh (Ed.), The language continuum, (pp. 1-40). Parkton, MD: York Press.

Dodge, D.T. & Colker, L.J. (Eds.). (1996). The creative curriculum for early childhood (Third Ed.). Washington, DC: Teaching Strategies Inc.

Donald, M. (1991). Origins of the modern mind: Three stages in the evolution of culture and cognition. Cambridge, MA: Harvard University Press.

Egan, K. (1987). Literacy and oral foundations of education. Harvard Educational Review, 57, 445-472.

Halliday, M. (1975). Learning how to mean: Explorations in the development of language. New York: Elsevier.

Hart, B., & Risely, T.R. (1995). Meaningful differences in everyday experiences of young American children. New York: Paul H. Brookes.

Heath, S.B. (1982). What no bedtime story means: Narrative skills at home and at school. Language in Society, 11, 49-76.

Heath, S.B. (1983). Ways with words: Language, life, and work in communities and classrooms. Cambridge, England: Cambridge University Press.

Hughes, D., McGillivray, L., & Schmidek, M. (1997). Guide to Narrative Language. Eau Claire, WI: Thinking Publications.

Hunt, K.W. (1965). Grammatical structures written at three grade levels (Research Report No. 3). Urbana, IL: National Council of Teachers of English.

Leadholm B. & Miller, J. Language sample analysis: The Wisconsin Guide. Madison, WI: department of Public Instruction.

Liles, B. (1985). Cohesion in the narratives of normal and language-disordered children. Journal of Speech and Hearing Research, 28, 123-133.

Link, B. (1995). Comparison of LD, low achieving, and average achieving children across three levels of discourse. Unpublished master's thesis, Louisiana State University, Baton Rouge.

Masterson, J. & Kamhi, A. (1991). The effects of sampling conditions on sentence production in normal, reading-disabled, and language-learning-disabled children. Journal of Speech and Hearing Research, 34, 549-558.

McCabe, A. & Peterson, C. (1985). A naturalistic study of the production of casual connectives by children. Journal of Child Language, 12, 145-159.

McCabe, A. (1997). Developmental and cross-cultural aspects of children's narratives. In M. Bamberg (Ed.). Narrative development: Six approaches. Mahwah, NJ: Lawrence Erlbaum Associates.

McCabe, A. & Peterson, C. (1991). Getting the story: A longitudinal study of parental styles in eliciting narratives and developing narrative skill. In A. McCabe & C. Peterson (Eds.), Developing narrative structure. Mahwah, NJ: Lawrence Erlbaum Associates.

McCabe, A. & Rollins, P. (1994). Assessment of preschool narrative skills: Prerequisite for literacy. American Journal of Speech-Language Pathology: A Journal of Clinical Practice, 4, 45-56.

Miller, L. (1990). The roles of language and learning in the development of literacy. Topics in Language Disorders, 10, 1-24.

Moffett, J. (1968). Teaching the universe of discourse. Boston: Houghton Mifflin.

Naremore, R. C. (1997). Making it hang together: Children's use of mental frameworks to structure narratives. Topics in Language Disorders, 18(1), 16-31.

Nelson, K. (1974). Concept, word, and sentence: Interrelations in acquisitions and development. Psychological Review, 81, 267-285.

Nelson, K. (1985). Making sense: The acquisition of shared meaning. New York: Academic Press.

Nelson, K. (1986). Event knowledge: Structure and function in development. Hillsdale, NJ: Lawrence Erlbaum Associates.

Nelson, K. (Ed.). (1989). Narratives from the crib. Cambridge, MA: Harvard University Press.

Nelson, K. (1996). Language in cognitive development: The emergence of the mediated mind. Cambridge, England: Cambridge University Press.

Nicolopoucou, A. (1997a). Worldmaking and identity formation in children's narrative play-acting. In B. Cox & C. Lightfoot (Eds.), Sociogenetic perspectives on internalization (pp. 157-187). Mahwah, NJ: Lawrence Erlbaum Associates.

Nicolopoucou, A. (1997b). Children and narratives: Toward an interpretative and sociocultural approach. In M. Bamberg (Ed.), Narrative development (pp. 179-216). Mahwah, NJ: Lawrence Erlbaum Associates.

Nicolopoucou, A., Scales, B., & Weintraub, J. (1994). Gender differences and symbolic imagination in the stories of four-year-olds. In A. H. Dyson & C. Genishi (Eds.), The need for story: Cultural diversity in classroom and community (pp. 157-187). Urbana, IL: National Council of Teacher's of English.

Norris, C. & Bruning, R. (1988). Cohesion in the narratives of good and poor readers. Journal of Speech and Hearing Disorders, 53, 416-424.

Norris, J. A. & Hoffman, P. R. (1993). Whole language intervention for school-age children. San Diego, CA: Singular Publishing Group.

Norris, J. A. & Hoffman, P. R. The SDS: Development Model of integrated functioning. (Unpublished assessment scale) by J.A. Norris & P.R. Hoffman, 1997, Baton Rouge, Louisiana. Copyright ©1997.

Norris, J. & Hoffman, P. (in press). Language contexts, levels, and dimensions: A connectionist perspective on holistic intervention. In R.G. Daniloff (Ed.). Clinical and developmental language behavior from a connectionist perspective. Mahwah, NJ: Lawrence Erlbaum Associates.

Olson, D. (1977). From utterance to text: The literate bias of language in speech and writing. Harvard Educational Review, 47, 257-281.

Patterson, J. L. & Westby, C.E. (1998). The development of play. In W. Haynes & B. Shulman (Eds.), Communication development: Foundations, processes, and clinical applications. Baltimore: Williams & Wilkins.

Pellegrini, A. (1982). The generation of cohesive text by preschoolers in two play contexts. Discourse Processes, 5, 101-108.

Pellegrini, A. (1985). Relations between preschool children's symbolic play and literate behavior. In L. Galda & A. D. Pellegrini (Eds.), Play, language, and stories (pp. 79-98). Norwood, NJ: Ablex Publishers.

Pellegrini, A. (1986). Play center and the production of imaginative language. Discourse Processes, 9, 1-9.

Pellegrini, A. (1998). The development of school-based literacy: A social ecological perspective. New York: Routledge.

Peterson, C., Jesso, B., & McCabe, A. (1999). Encouraging narratives in preschoolers: An intervention study. Journal of Child Language, 26, 49-67.

Piaget, J. (1932). The language and thought of the child. New York: Harcourt, Brace and Co.

Piaget, J. (1952). The origins of intelligence in children. New York: International Universities Press. (Original work published 1936).

Piaget, J. (1954). The construction of reality in the child. New York: Basic Books. (Original work published 1937).

Piaget, J. (1962). Plays, dreams, and imitation in childhood. New York: Norton. (Original work published 1945).

Piaget, J. (1970). Piaget's theory. In P.H. Mussen (Ed.), Carmichaels' handbook of child development (vol. I, pp. 703-732). New York: Wiley.

Piaget, J. (1972). Judgement and reasoning in the child. NJ: Littlefield, Adams, & Co. (Original work published 1928).

Piaget, J. & Inhelder, B. (1962). Le développement des quantites physiques chez l'enfant [The development of physical quantities in the child]. (2nd rev. ed.). Neuchatel, Switzerland: Delachaux and Niestle.

Reese, E. (1995). Predicting children's literacy from mother-child conversations. Cognitive Development, 10, 381-405.

Reiser, L. (1991). Bedtime cat. New York: Trumpet Books.

Rosch, E. (1975). Cognitive representation of semantic categories. Journal of Experimental Psychology: General, 104, 192-233.

Saussure, F.D. (1959). Course in general linguistics. New York: The Philosophical Library, Inc. (Original work published 1915).

Schneider, P. (1996). Effects of pictures versus orally presented stories on retellings by children with language impairment. American Journal of Speech-Language Pathology, 8, 86-96.

Scott, L. (1997). The effects of contextualization on fluency and language in three groups of children. Unpublished doctoral dissertation, University of Nebraska, Lincoln.

Shames, G.H. & Wiig, E.H. (1986). Human communication disorders (2nd Ed.). Upper Saddle River, NJ: Merrill.

Snow, C. & Dickinson, D. (1990). Social sources of narrative skills at home and at school. First Language, 10, 87-103.

Snow, C. & Tabors, P. (1993). Language skills that relate to literacy development. In B. Spodek & O. Saracho (Eds.), Language and literacy in early childhood education (pp. 1-20). New York: Teachers College Press.

Vygotsky, L. (1997). Thought and language (A. Kozulin, Trans.). Cambridge, MA: MIT Press. (Original work published 1934).

Vygotsky, L. (1978). Mind in society. Cambridge, MA: MIT Press. (Original work published 1933).

Weist, R.M., Lyytinen, P., Wysocka, J. & Atanassova, M. (1997). The interaction of language and thought in children's language acquisition: a crosslinguistic study. Journal of Child Language, 24, 81-121.

Westby, C.E. (1980). Assessment of cognitive and language abilities through play. Language, Speech, and Hearing Services in Schools, 11(3), 154-168.

Westby, C.E. (1991a). Learning to talk – talking to learn: Oral – literate language differences. In C. Simon (Ed.), Communication skills for classroom success: Assessment and therapy methodologies for language and learning disabled students (pp. 334-355). Eau Claire, WI: Thinking publications. (Originally work published 1986).

Westby, C.E. (1991b). A scale for assessing children's pretend play. In I. B. Weiner (Ed.), Play diagnosis and assessment (pp. 131-161). New York: John Wiley and Sons.

APPENDIX A TEACHER CONSENT FORM

TEACHER CONSENT FORM

Proposed research project title: The Performance of Prekindergarten Children on
Representational Tasks Across Levels of Displacement

INVITATION TO PARTICIPATE

You and children in your classroom have been invited to participate in a doctoral dissertation research project. The research is designed to learn more about how young children mentally represent everyday routines and stories. Children may be selected from your classroom based on the following criteria: age between 4 years 6 months and 5 years, 6 months; normal vision, hearing, and motor skills; and average classroom performance. Parents who sign the Parental Consent Form will also provide me, Emily Smith, with permission to view the school copy of the child's vision and hearing report.

PURPOSE OF THE STUDY

As a doctoral candidate at Louisiana State University, I am interested in learning more about the interrelationship of language and literacy knowledge in early development. The research findings from this study will be potentially useful in supporting a theoretical model of early language and literacy development. This model would be useful for improving teacher preparation and caretaker training programs designed to prepare adults to better facilitate young children in developing emergent literacy skills.

EXPLANATION OF PROCEDURES

The administrators of your educational institution have given me permission me to conduct research in your school. In order to complete this study, I will also need your cooperation. I am asking that you assist me in selecting four children whose classroom performance is representative of the overall class. I will then ask these children to participate in seven short assessment tasks requiring approximately 30 minutes for each of the four children. To assist me in describing the program's curriculum, I will ask you to complete a teacher questionnaire. Your professional performance is not being evaluated in this research project.

Names of children whose parents or legal guardians have signed the consent form and who also meet the above mentioned selection criteria for this study will be placed into a pool. You will be asked to participate in a brief activity designed to help determine the children from this pool who are most representative of the class. These children will be given a short test of nonverbal ability. In this test, the child is asked to look at a set of drawings and point to a drawing that belongs with the set. From this information, four children will be selected as subjects

I will arrange a convenient time for you to have me visit your classroom on the day before I schedule to take the selected children from the classroom for participating in seven brief assessment tasks. I will interact with the children during play or assist you in a class activity. This should help the children to become familiar with my presence and to feel comfortable leaving the classroom with me for a short while the next school day. In the one, approximately 30 minute, videotaped session, the child will be asked to complete seven short tasks related to an activity they daily experience in the home and tasks related to stories appropriate for young children. These individual sessions will be videotaped and transcribed for the purpose of later analysis. The child's parent or legal guardian will also be contacted by telephone to answer a questionnaire about the child's routine in the home.

All videotaped sessions will be conducted in an area of the school in which the video camera can be set up. You will be consulted as to the most convenient time to have the child leave the classroom. No child will be taken from the classroom unless the child is agreeable to leaving.

POTENTIAL RISKS AND BENEFITS

There are no potential risks for you or for the children in your classroom in this study. Please be assured that strict adherence to the policies and standards of Bulletin 741 governing research projects in Louisiana schools is guaranteed.

The videotape and language samples collected in this research will contribute to a theory of child development that is potentially beneficial for guiding adults in their interactions with young children.

ASSURANCE OF CONFIDENTIALITY

The information collected will be treated confidentially. At no time will the identity of a teacher or a child be revealed to anyone including others at Louisiana State University involved in this research project. To assure this, an identification number will be assigned to each subject selected to participate in this study. The results of this study will be included in the dissertation completed as a requirement for the doctoral degree. The results may also be shared with early childhood professionals through journal articles, workshops, or presentations at conferences. No actual names of children, teachers, or schools will be attached to any child's language samples or videotape performances in the dissertation or any other presentation of this study.

WITHDRAWAL FROM THE STUDY

Your participation is voluntary as is the participation of parents and children. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time.

OFFER TO ANSWER QUESTIONS

If you have additional questions or concerns, please contact me at the number below. When the study is completed you will be invited to have the results explained to you. Thank you for your interest in this research project.

YOU ARE VOLUNTARILY MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE READ THE INFORMATION PROVIDED IN THIS CONSENT FORM; THAT YOU WILL ASSIST IN SELECTING REPRESENTATIVE SUBJECTS AND WILL COMPLETE THE CURRICULUM QUESTIONNAIRE; AND THAT YOU HAVE DECIDED TO ALLOW THE SELECTED CHILDREN TO LEAVE THE CLASSROOM TO BE VIDEOTAPED WHILE COMPLETING ASSESSMENT TASKS. YOU BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

Signature of Preschool Teacher

Date

Signature of Investigator

Emily F. Smith, Ed. S.
P O Box 518
New Roads, LA 70760
(225) 638-8909

APPENDIX B PARENT CONSENT FORM

PARENT CONSENT FORM

Proposed research project title: The Performance of Prekindergarten Children on Representational Tasks Across Levels of Displacement

INVITATION TO PARTICIPATE

Children in your child's classroom have been invited to participate in a doctoral dissertation research project. The research is designed to learn more about how young children mentally represent everyday routines and stories. Your child may be selected from a larger group based on the following criteria: age between 4 years 6 months and 5 years, 6 months; normal vision, hearing, and motor skills; and average classroom performance. Signing this consent form to allow your child to participate will also provide me, Emily Smith, with permission to view the school copy of your child's vision and hearing report.

PURPOSE OF THE STUDY

The knowledge resulting from this study could be useful in future teacher preparation and caretaker training programs. Teachers and caretakers might become more effective in helping young children develop emergent literacy skills.

EXPLANATION OF PROCEDURES

If you sign this consent form and your child meets the above mentioned selection criteria for this study, his or her name will be placed in a pool. From this pool some names will be selected and these children will be given a short test of nonverbal ability. In this test, the child is asked to look at a set of line figure drawings and point to a drawing that belongs with the set.

If your child is selected, he or she will be chosen as a representative of the class even though there may be other children having the same selection characteristics who are not chosen. All children returning the signed consent form cannot be included in the study. A sample of only four children who are felt to be representative of the class will be needed. You will be notified by telephone if your child is one of the four. At this time you will be asked to answer a short telephone questionnaire related to your child's daily routine.

These four children will become familiar with my presence in the classroom before participating in one individual session lasting approximately 30 minutes. The session will be videotaped and transcribed for the purpose of later analysis. All videotaped sessions will be conducted in an area of your child's school in which the video camera can be set up. The child's classroom teacher will be consulted as to the most convenient time to have the child leave the classroom. No child will be taken from the classroom unless the child is agreeable to leaving.

POTENTIAL RISKS AND BENEFITS

There are no potential risks for the child in this study. Please be assured that strict adherence to the policies and standards governing research projects in Louisiana schools is guaranteed.

The videotape and the language samples collected in this research will contribute to a theory of child development that is potentially beneficial for guiding adults in their interactions with young children.

ASSURANCE OF CONFIDENTIALITY

The information collected will be treated confidentially. At no time will the identity of your child be revealed to anyone including others at Louisiana State University involved in this research project. To assure this, an identification number will be

assigned to each child selected to participate in this study. The results of this study will be included in the dissertation completed as a requirement for the doctoral degree. The results may also be shared with early childhood professionals through journal articles, workshops, or presentations at conferences. No actual names of children or schools will be linked to any child's language samples or videotape in the dissertation or any other presentation of this study.

WITHDRAWAL FROM THE STUDY

Your participation and the participation of your child is voluntary. Your decision to participate or not participate will not affect your child's school program. If you decide to participate, you and child are free to withdraw your consent and to discontinue participation at any time.

Your child's agreement to participate will be obtained before the session begins. If your child does not agree to participate, she or he will be thanked and taken back to the classroom.

OFFER TO ANSWER QUESTIONS

If you have additional questions or concerns, please contact me at the number below. When the study is completed you will be invited to have the results of this study explained to you. Thank you for your interest in this research project.

(Occupation)
Mother's Name & Phone Number

(Occupation)
Father's Name & Phone Number (if different from Mother's)

(Relationship to person signing this form >)
Name of any other adult who lives in your home and is present there during the school day. (Provide this person's name and relationship to you only if this person helps take care of your child, is very familiar with your child's everyday routines, and you agree to allow the researcher to ask this person to complete the short telephone questionnaire. This person will be contacted only if you cannot be reached.)

Work Phone Number (Provide this if you agree to be contacted at work for the short telephone interview)

YOU ARE VOLUNTARILY MAKING A DECISION WHETHER OR NOT TO ALLOW YOUR CHILD/LEGAL WARD TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE READ THE INFORMATION PROVIDED IN THIS CONSENT FORM AND THAT YOU HAVE DECIDED TO PERMIT YOUR CHILD OR LEGAL WARD TO PARTICIPATE. THE RESEARCHER WILL SIGN THIS CONSENT FORM WHEN IT IS RETURNED TO SCHOOL AND YOU WILL BE SENT A COPY TO KEEP.

Signature of Parent or Legal Guardian

Date

Child's Name

Signature of Researcher

Emily F. Smith, Ed. S.
P O Box 518
New Roads, LA 70760
(225) 638-8909

APPENDIX C

HOME LITERACY EXPERIENCE QUESTIONNAIRE

1. **Direct**. About how often does your child write or pretend he/she is writing?
2. **Indirect**. About how often does your child play with objects that he/she uses to stand in for some other objects such as using a stick as a microphone or using a remote control for a cordless phone or cellular phone?
3. **Unscored**. About how often does your child ask to eat fruit? **What fruits does he/she like most?**
4. **Direct 1**. About how often does your child ask to have a favorite storybook read? **What is the title of the book?**
5. **Direct 2**. About how often does your child write her/his name correctly?
6. **Indirect**. About how often do you talk with your child about something that happened to her/him in the past?
7. **Direct**. About how often does your child see his/her name in print and recognize it?
8. **Indirect 1**. About how often do you explain to your child that your brothers and sisters are her/his uncles and aunts? **For grandparents:** About how often do you explain to your grandchild that your son/daughter is his/her parent and that your other children are his/her aunts and uncles?
9. **Indirect**. About how often do you talk to your child about zoo animals or farm animals to help her/him to know the difference? For example, talk to help your child understand why a giraffe would not be found on a farm.
10. **Indirect 2**. About how often does your child ask you to pretend to be someone other than yourself while he/she pretends to be someone else?
11. **Direct**. About how often does your child push the correct numbers to call someone on the phone?
12. **Indirect**. When watching TV or videotapes, about how often do you stop to explain scenes that you think your child does not understand?
13. **Direct 3**. About how often do you notice your child holding a storybook and turning the pages pretending to read?
14. **Indirect 4**. About how often is your child able to follow many directions given at one time for familiar tasks such as: *Go to the bathroom, open the bathtub drain so the water can run out, find the soap in the water, put it in the soap holder, and then dry your hands?*
15. **Direct**. About how often does your child attempt to count groups of objects such as: spoons, soft drink cans, bananas, or buttons on the front of a shirt?

16. **Direct** 2. About how often does your child correctly write all the letters in his/her name so that they are clearly recognizable by others?
17. **Indirect**. About how often do you explain to your child while folding laundry how you are categorizing the family's clothing, towels, and other items into groups or different stacks?
18. **Direct**. About how often do you hear your child making up pairs of rhyming words and saying things such as *fun rhymes with run* or *cat rhymes with bat*?
19. **Indirect**. About how often does your child notice his/her baby picture and talk about it in a way that shows he/she clearly understands that she/he used to be a baby?
20. **Direct**. About how often does your child ask you to spell names or words?
21. **Direct**. About how often does your child ask to see a particular children's videotape? **Name of tape?**
22. **Indirect**. About how often do you talk to your child when putting away groceries or dishes telling him/her where different categories of food or different kitchen items belong?
23. **Indirect 4**. About how often does your child correctly follow several directions given at once. For example: *Go get your dirty tennis shoes and your socks by the front door, take them to the dirty clothes basket, and then go get your new shoes under the sofa?*
24. **Indirect**. About how often do you talk to your child about what doctors and nurses do and why they need to do certain things to help people feel better?
25. **Direct**. About how often does your child pick out words that she/he can recognize on the pages of storybooks? **What word/s do you think your would your child be able to recognize from a storybook?**
26. **Direct**. About how often does your child watch television programs for preschool children such as Barney, Sesame Street, Telie Tubbies, or Blues Clues?
27. **Direct 4**. About how often does your child get to use children's software or a word processing program on a computer other than the computer that is in your child's school classroom?
28. **Unscored**. About how often does your child ask for a favorite food? **What is this favorite food?**
29. **Direct**. About how often does your child come to you and ask you to write down a certain word or a message? **What has your child asked you to write?**
30. **Reverse score- Indirect**. About how often does your child use the words "tomorrow" and "yesterday" incorrectly or hear these words and react in a way that lets you know that she/he does not yet fully understand what these words mean ?

31. **Indirect 3.** About how often does your child tell about something that happened at school in a clear enough way so that you can understand what happened even though you were not there to see?
32. **Indirect.** About how often do you describe to your child what you are doing when you are cooking or preparing food?
33. **Unscored.** About how often would your child needs to be disciplined? **What sort of discipline have you most recently given your child?**
34. **Direct.** About how often do you point out and read road signs or signs on building or on walls when you are driving, shopping, or walking with your child? **What sign have you most recently pointed out to your child?**
35. **Indirect.** About how often do you hear your child use time words such as ***"at 8 o'clock , in two hours, in one more week, or next month, even if they are used incorrectly?"***
36. **Indirect 1.** About how often do you talk to your child about her/his grandparents explaining to her/him that they are your or her/his father's (*or mother's*) parents? **For grandparent:** About how often do you tell your grandchild that you are his/her mother's/father's parent?
37. **Indirect.** About how often do you and your child look at pictures of him/her and you talk to him/her about what was happening and where she/he was when the picture was taken?
38. **Indirect.** About how often do you explain to your child how people get money or the source of your money?
39. **Direct.** About how often does your child bring objects to you that have printed words on them such as cereal boxes, toys, advertisements from magazines or newspapers and ask you to **"read what it says"** ?
40. **Indirect.** About how often do you retell a story about something that **happened to your child in the past** such as a time when she/he got hurt or got lost, or a time when she/he did something unusual?
41. **Unscored.** About how often does your child dress attempt to dress himself/herself? **What articles of clothing can your child put on without help?**
42. **Direct.** About how often do you to go to the library for children's books or get a new children's book in the store or through a book club? **What is the title of the most recent book your child has received from either the library, a store, or book club?**
43. **Direct 1.** About how often does your child seem to be interested in having storybooks read to him/her?

44. **Indirect**. About how often do you ask your child to bring a certain package to you such as a certain brand of cereal or soft drink where she/he would have to recognize the correct label to be able to get the right package?
45. **Indirect 3**. About how often is your child able to explain to you something that happened at someone else's house when you were not there so that you can clearly understand what happened without having an older child or adult explain the event to you?
46. **Reverse Score - Indirect**. About how often does you child seem to get confused between things that happened to someone else and things that happened to her/him so that she/he talks about things that happened to others as if these things happened to her/him?
47. **Direct**. About how often does your child play with alphabet toys at home such as an alphabet puzzle play, plastic magnetic letters, or blocks with letters at home?
Which type of alphabet toy does your child have at home?
48. **Direct**. About how often does your child use crayons, markers, paints, pens or pencils, and paper at home?
49. **Direct 4**. About how often does your child see computers being used or actually use a computer away from school?
50. **Indirect 2**. About how often does your child ask you to pretend in play with her/him?
51. **Indirect**. About how often does your child pretend either to go to or to work in a restaurant, acting out activities such as ordering, serving, and eating?
52. **Direct**. About how often have you seen your child find the correct letters on a computer or typewriter to type her/his name all by her/himself?
53. **Direct 3**. About how often does your child make believe he/she is reading something that has printed words on it such as a food package, a sign, a magazine, a newspaper, or book?
54. **Direct**. About how often do you hear your child repeat nursery rhymes such as "Humpty Dumpty," "The 3 Little Kittens," or "One Two Buckle My Shoe?"
55. About how many storybooks would you estimate to be in your home right now?
_____ **What are the titles of some of these books?**

APPENDIX D
INSTRUCTIONS FOR PARENT/CARETAKER REPORT

May I speak with _____

My name is Emily Smith. A few weeks ago, _____'s teacher sent home a CONSENT FORM asking your permission to allow your child to participate in my study. You signed the CONSENT FORM and _____ was selected to participate in this research project to study child thought and memory before entering kindergarten.

At school, your child was asked to retell or to perform certain common events in the daily lives of young children. I will be better able to understand child memory and thought development at this age by comparing her/his performance to your responses on questions in this interview. The interview will take about 30 minutes.

It's important that you answer as accurately as possible. How well you are raising your child is not being judged and your child is not being compared to other children. I will fill out a questionnaire form while talking to you. No where on this form does your name or your child's name appear. There is only a research identification number on the form. The information you provide is confidential and will never be linked to your name or your child's name not even for your child's teacher.

The first questions I ask will be about events involving you and your child. Many of the events I mention may be beyond what most children your child's age are normally able to participate in and you should feel comfortable saying that this is something your child never does. You can best help me to learn about children this age by thinking about what you and your child actually do and then answering as best you can.

All questions can be answered with:

0 = Never

1 = About once a month

2 = About once a week

3 = Several times a week

4 = About everyday

5 = Several times a day

I will repeat these choices after each question until you are familiar with the answer choices. You may ask for the choices at anytime during the interview.

APPENDIX E

INSTRUCTIONS FOR FAMILY ROUTINE REPORT

The activities that I asked your child to participate in were related to the bedtime routine because this is the one routine that children experience on a nightly basis and one they might remember better than others. In order to determine the accuracy of your child's performance, it will be important for you tell me all the things that your child usually when it's time to go to bed. The accuracy of your child's memory will be compared to what you tell me.

**Does your child usually begin by undressing for bath time or would you say that the getting ready for bed routine begins with another event?
What happens next? *Continue in this manner.***

Closure: Thank you for answering this questionnaire. I appreciate your time and effort to help me complete my research project. You will be invited to hear the results explained to you at your child's school during the Fall 99 school semester.

APPENDIX F FAMILY ROUTINE REPORT

ID#	Relationship of Informant to child
Reported Acts	Order
PRELIMINARY EVENT	
Undress	
CONSEQUENCE	
Turn water on	
Get in tub	
Wash up	
TRANSITION	
Put soap up	
Let water out	
Dry off	
PREPARATION	
Locate nightclothes (parent provided or in bedroom)	
Dress in nightclothes	
HABITS	
Eats	
Brushes teeth	
READINESS	
Read/Tell story	
Tape/TV	
Prayers	
BED	
Get in bed	
Tuck-in/Cover-up	
Kiss	
CODA	
Switch off light	
Say goodnight	
Fall asleep	
Interviewer Comments:	

APPENDIX G
INSTRUCTIONS TO CHILD FOR REPRESENTATIONAL TASKS

Task 1. Contextualized Relational

Let's pretend you are getting ready for bed at your house.

Show me everything you have to do when you get ready for bed at home. You can pretend this rug *[point to rug]* is the bed and if you need a bathtub you can pretend this *[point to large plastic tub]* is the bathtub.

I brought some other things that I thought you might need to pretend all the things you do at home when you have to take off your school clothes or play clothes to get ready for bed. You can just pretend you are taking off your clothes.

Task 2. Contextualized Symbolic

These are pictures of a little girl/boy getting ready for bed and they have gotten all mixed up. *[Place first 4 pictures of the sequence randomly in front of the child.]*

Let's put them back in order to show how the girl/boy gets ready for bed. Help me find the first thing you need to do when it's time to take off your play clothes or your school clothes and get ready to go to bed.

Look carefully at all the pictures. Which picture shows the first thing you need to do when it's time to get ready for bed? *[Line up the photos in the sequence pointed to or picked up by the child.]* And what does she/he do next?" *[Ask after each of the first 3 photos selected by the child is placed in the sequence.]*

[After placing the fourth photo]* Now here are more pictures showing more things the girl/boy does before going to bed. *[Place photos randomly in front of child.]

Look carefully at these pictures to find the one that shows what the girl/boy needs to do next to get ready for bed. What comes next after she/he does this? *[Point to the last picture placed in the initial sequence. Continue placing photos according to the sequence pointed to or picked up by the child.]* And what does she/he do next? *[Ask after each of the first 3 photos of the second sequence are selected by the child.]*

Now look at the pictures lined up here. *[Sweep hand from left to right across photos.]*

Check to see if they are lined up to show the right way to get ready for bed. Tell me if you need to move any pictures to show the right way to get ready for bed. [Allow child to remove photo from sequence only when he/she can indicate where it belongs. Assist child to make space/s where indicated for repositioned photo/s and close any open space/s.]

[After child has indicated that the photos are in the correct order, point to the first photo.] What is the girl/boy doing here? [Continue by pointing to each successive photo, repeating question as needed.]

[Record order] Thank you for helping with the pictures. [Say as photos are picked up.] This one, then this next, then this one, etc. [Remove photos from child's sight.]

Task 3. Contextualized Logical

This is Polly Puppy and this is her little girl/boy doll. She doesn't know what boys and girls have to do to get ready to go to bed. You know what boys and girls do to get ready for bed and you can help her learn.

The little girl/boy doll needs very little things to get ready for bed. I only have a little bar of soap and a little blanket. I don't have all the other things a little girl/boy needs to get ready for bed so you will just have to pretend you have the other things she/he needs.

Now show Polly and tell her how to get the little boy/girl ready for bed just like you get ready for bed at your house.

[Puppet says] Please help me learn how to get my little girl/boy ready for bed. Show me and tell me how to make her/him do everything you do at your house to get ready for bed.

[After child finishes routine with the doll, have puppet get the doll ready for bed or, if child asks for a turn with the puppet, allow child to make the puppet get the doll ready for bed.]

Task 4. Decontextualized Egocentered

Here's Freddie Frog.

[Freddie says] Rivet , rivet. I'm Freddie Frog and I don't want to be a frog anymore.

Freddie wants to be a real child and live in a house and go to bed like a real child.

[Freddie says] I don't want to sleep outside anymore, I want to go to bed like a real child.

Freddie will know what to do if you just tell him/her. Tell him all the things you have to do at your house to get ready for bed at home so he can ready for bed by himself.

After you tell Freddie everything he needs to do, he will try to get ready all by himself.

[Enact slapstick routine with puppet or, if child asks for a turn with puppet, allow child to make puppet get ready for bed.]

Task 5. Decontextualized Decentered

This is a book about a little girl who was getting ready for bed one night.

Let's read the story to find out what happened one night when it was time for her to get ready for bed.

The story is called BEDTIME CAT. Show me the cat.

[After child indicates cat on the front cover.] Now let's read the story to find out what happened.

[READ story. Pause after reading text under drawing depicting cat running out the bathroom doorway and point to the cat.] What's happening here?

[After child indicates the cat is running out, point to girl's eyes.] Does the girl see? [Continue reading after child indicates that the girl does not see the cat leave. Provide additional prompts if necessary.]

[After reading line of text, "My cat is lost", point to the drawing of the girl being led by an adult hand.] Who's holding the girl's hand? [Child should indicate hand belongs to the girl's mother.]

[At end of story, remove book from child's sight.]

I hear something. [Make muffled puppy sounds as puppy puppet is retrieved from bag.] It's Polly Puppy. She was sleeping in my bag.

[Polly says] Ms. Emily, will you read the BEDTIME CAT story to me?

[Tell child] Polly was fast asleep in the bag while I was reading the story and she didn't get to hear the story.

[Tell puppet] Oh Polly, I just read that story to (Child's name). I'm too tired to read it all over again. But (Child's name) is a nice girl/boy. I think she/he will tell you what that story is about.

Please tell Polly Puppy all the things you remember from the BEDTIME CAT story.

[Polly says] (Child's name), please tell me what happened in the BEDTIME CAT story.

[Puppet gives up to 4 prompts to child.]

Task 6. Decontextualized Relational

The way children do things at home is different from the way they do things at school.

At home when it's lunch time you go to the kitchen and somebody fixes the food and you sit down at the table to eat.

At school you have to do things with your class and everyone has to take turns and follow the same rules.

When it's time for lunch at school, Ms. (Teacher's name) says to line up and you have to walk quietly to the cafeteria and you take turns washing your hands and getting your tray.

You have to push your tray down the line and the ladies put the food on your tray, then you sit at a table with your class and eat your lunch.

Then you have to wait for the teacher to tell you when to put your tray up and then you line up again and walk quietly back to the classroom.

Well, let's pretend that one day after lunch and after naptime, when it was almost time for the buses/vans to come to school and then take the children home, something strange happened. A very bad storm or a hurricane came to (name of city). The wind was blowing things down outside and there was a lot of lightening and rain and very loud thunder.

Ms. (Principal's name) and Ms. (Teacher's name) said, "The children can't go home today."

The bus drivers couldn't drive the buses on the roads because it was too dangerous to drive on the roads in the very bad weather.

And the mamas and the daddies couldn't drive to the school to get the children because it was too dangerous. So the mamas and the daddies had to stay where they were until the bad storm was over. And the children had to stay at school and the teacher had to take care of them until the bad storm was over.

Ms. (Teacher's name) had to get all the children ready for bed and the children had to sleep at school that night.

Ms. (Teacher's name) had to make some rules so that the children could take turns to do the same things to get ready for bed at school.

Let's pretend Ms. (Teacher's name) had some blankets and some toothbrushes to pass out to the children.

Tell the story about how Ms. (Teacher's name) would make rules so that all the children could get ready for bed at school instead of at their houses on the night when the big storm came to (name of city).

[Provide up to 4 prompts.]

Task 7. Decontextualized Symbolic

Do you like to hear stories?

When I was a little like you, I used to make up stories about a little girl/boy who was getting ready for bed one night. Sometimes I made up funny stories or scary stories, or sad stories.

Let's tell a story about what happened one night when a little boy/girl named CARLA/CARL was getting ready for bed.

Think about something that happened one night at C's house. *[pause]*

Now, I will start the story and you can tell the rest.

One night when it was time for C to go to bed....

[Provide up to 4 prompts.]

APPENDIX H HOME LITERACY EXPERIENCE SCORE SHEET

ID # _____ Informant's relationship to child _____

Question	Direct Literacy							Indirect Literacy							
	N	M	W	xW	D	xD		N	M	W	xW	D	xD		
1. D															
2. I								2.							
3. U															
4. D (1) 43															
5. D (2) 16															
6. I								6.							
7. D															
8. I (1) 36								8.							
9. I								9.							
10. I (2) 50								10.							
11. D															
12. I								12.							
13. D (3) 53															
14. I (4) 23								14.							
15. D															
16. D (2) 16															
17. I								17.							
18. D															
19. I								19.							
20. D															
21. D															
22. I								22.							
23. I (4) 14								23.							
24. I								24.							
25. D															
Column Totals	x0	x1	x2	x3	x4	x5	Dir. score p. 1		x0	x1	x2	x3	x4	x5	Indir. score p. 1
Weight Totals Page 1	0							0							

ID # _____ Informant's relationship to child _____

Question	Direct Literacy						Indirect Literacy						
	N	M	W	XW	D	xD	N	M	W	XW	D	xD	
26. D													
27. D (4) 40													
28. I													
29. D													
30. I (Rev)							xD	D	xW	W	M	N	
31. I (3) 48							30.						
32. I							31.						
33. U							32.						
34. D													
35. I													
36. I (1) 8							35.						
37. I							36.						
38. I							37.						
39. D							38.						
40. I													
41. U							40.						
42. D													
43. D (1) 4													
44. I							44.						
45. I (3) 31							45.						
46. I (Rev)							xD	D	xW	W	M	N	
47. D							46.						
48. D													
49. D (4) 27													
50. I (2) 10							50.						
Column Totals	x0	x1	x2	x3	x4	x5		x0	x1	x2	x3	x4	x5
Weight Totals Page 2	0							0					
							Dir. Score 2.2						Indir. Score 2.2

ID # _____ Informant's relationship to child _____

Question	Direct Literacy						Indirect Literacy						
	N	M	W	XW	D	xD	N	M	W	XW	D	XD	
51. I							51.						
52. D													
53. D (3) 13													
54. D													
Column Totals	x0	x1	x2	x3	x4	x5	Dir. score p. 3	x0	x1	x2	x3	x4	x5
Weight Totals Page 3	0							0					
							p. 2						p. 2
							p. 1						p. 1
Weight Totals							Total Dir.						Total Indir.

About how many children's storybooks do you have in your home right now? _____

Can name 3 titles. Yes No

Reliability Check

Direct :

1. (4+43)

2. (5+16)

3. (13+53)

4. (27+49)

Indirect:

1. (8+36)

2. (10+50)

3. (31+45)

4. (14+23)

APPENDIX I TASK SCORE SHEETS

ID# _____ High Support Enactment (SDS Level III: Contextualized Relational)

Task 1	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	Score
PRELIMINARY EVENT Undress												
RESPONSE Turn water on Get in tub Wash up												
TRANSITION (from bath to dressing) Let water out/Put soap up Get out Dry off												
PREPARATION Locate nightclothes (parent provided or found in bedroom) Dress in nightclothes												
HABITS Eat Brush teeth												
READINESS Read/Tell story Tape/TV Prayers												
BED Get in bed Tuck-in/Cover-up Kiss												
CODA Switch off light Say goodnight Fall asleep/Wake in morning												
Column Totals												
TOTAL SCORES	Content:						Form:					

ID# _____ Picture Sequencing (SDS Level IV: Contextualized Symbolic)

Task 2	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
PRELIMINARY EVENT Undress (A)												
RESPONSE Turn water on Get in tub Wash up (B)												
TRANSITION (from bath to dressing) Let water out/Put soap up Get out Dry off (C)												
PREPARATION Locate nightclothes (parent provided or go in bedroom) Dress in nightclothes (D)												
HABITS Eat Brush teeth (E)												
READINESS Read story (F) Tape/TV Prayers												
BED Get in bed Tuck-in/Cover-up Kiss (G)												
CODA Switch off light Say goodnight Fall asleep (H)												
Column Totals												
TOTAL SCORES	Content:						Form:					

ID# _____ Low Support Enactment (SDS Level V: Contextualized Logical)

Task 3	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
PRELIMINARY EVENT Undress												
RESPONSE Turn water on Get in tub Wash up												
TRANSITION (from bath to dressing) Let water out/Put soap up Get out Dry off												
PREPARATION Locate nightclothes (parent provided or in bedroom) Dress in nightclothes												
HABITS Eat Brush teeth												
READINESS Read/Tell story Tape/TV Prayers												
BED Get in bed Tuck-in/Cover-up Kiss												
CODA Switch off light Say goodnight Fall asleep/Wake in morning												
Column Totals												
TOTAL SCORES	Content:						Form:					

ID# _____ Verbal Account (SDS Level VI: Decontextualized Egocentered)

Task 4	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
PRELIMINARY EVENT												
Undress												
RESPONSE												
Turn water on												
Get in tub												
Wash up												
TRANSITION (from bath to dressing)												
Let water out/Put soap up												
Get out												
Dry off												
PREPARATION												
Locate nightclothes (parent provided or in bedroom)												
Dress in nightclothes												
HABITS												
Eat												
Brush teeth												
READINESS												
Read/Tell story												
Tape/TV												
Prayers												
BED												
Get in bed												
Tuck-in/Cover-up												
Kiss												
CODA												
Switch off light												
Say goodnight												
Fall asleep/Wake next morning												
Column Totals												
TOTAL SCORES	Content:						Form:					

ID# _____ Story Retelling (SDS Level VII: Decontextualized Decentered)

Task 5	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
INITIATING EVENT												
Comes home												
RESPONSE												
Play w/cat												
Read w/cat												
Eat w/cat												
TRANSITION (from playtime to bedtime)												
Bathe												
Dress												
Brush teeth												
PROBLEM												
Cat gone												
Needs to find cat												
PLAN												
Thinks where hiding in house												
Thinks cat is outside												
ATTEMPT												
Check bowl, chair, window												
Check cupboard, bookshelf,												
Chair, trash, outside												
OUTCOME												
Cries, mother comforts												
Mother takes to bedroom												
Finds/hugs waiting cat												
EVALUATION												
She's happy in bed w/cat												
Good night												
Girl and cat asleep												
Column Totals												
TOTAL SCORES	Content:						Form:					

ID# _____ Group Routine (SDS Level VIII: Decontextualized Relational)

Task 6	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
INITIATING EVENT Big storm/hurricane danger												
INTERNAL RESPONSE Fear danger/harm from wind Fear danger/harm from rain Fear of lightning/thunder												
TRANSITION (from routine to problem/planning) Time for kids to leave Principal says kids must stay Teacher says kids must stay												
PROBLEM Buses can't run Parents can't drive												
PLAN/RULE or ATTEMPT for For eating dinner/supper For washing												
PLAN/RULE or ATTEMPT for Dressing/nightclothes Brushing teeth Sleeping												
OUTCOME Everyone ready for bed Teacher reads bedtime story Children fall sleep												
EVALUATION Children/Teacher happy/sad Next day back to normal Lesson learned												
Column Totals												
TASK SCORES	Content:						Form:					

ID# _____ Story Generation (SDS Level IX: Decontextualized Symbolic)

Task 7	Content						Form					
	Sequence		Elaboration		Verbal		MLU		Complete		Complex	
	Order	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score	utt. #	score
INITIATING EVENT												
Time for bed												
RESPONSE												
Undress/bath/dry/dress												
Eat/brush teeth												
TV-story/bed-tiss/fall asleep												
TRANSITION (from routine to problem/planning)												
Monster/ghost/other appears												
Child/parent awakes												
Child/parent's emotional state changes												
PROBLEM												
Child/Parent may be/is harmed												
Property may be/is damaged or stolen												
PLAN												
Child thinks:												
Parent/other thinks:												
ATTEMPT												
So _____ did:												
So _____ did:												
So _____ did:												
OUTCOME												
Overcome evil character/ Evil character overcomes												
Characters safe/ injured												
Characters leave setting												
EVALUATION												
Things back to normal												
Things different as a result												
Lesson learned												
Column Totals												
TASK SCORES	Content:						Form:					

APPENDIX J RULES FOR SCORING

Content

1. Elaboration points are earned for gestured acts or verbalized acts when they

- a) Include **more than one act** in the event category:

Gesturing *taking off clothes* earns credit for the Preliminary Event category and the child also earns an elaboration point in this same category for the additional gesturing of *untying shoes* and *pulling them off* in Preliminary Event.

Take ya bath [Earns an event point in the Response category]

and followed by

Turn the water out [Earns an elaboration point in Response]

- b) Add a **specific character, place, or time element** to the event category (points here can only be earned for verbalizations):

I ask Daddy to get my pajamas. [Specific character in Preparation]

I go to bed at 8:00. [Specific time element in Bed]

I have to step out on a rug. [Specific place in Transition]

I get under the covers. [Specific place in Bed]

No elaboration points are earned for no nonspecific references (although they may earn elaboration credit for an additional act in a category):

Somebody gets my pjs. [Nonspecific character in Preparation]

I go to bed at bedtime. [Nonspecific time in Bed]

I get out the tub. [Nonspecific place in Transition]

I get in bed. [Nonspecific place in Bed]

2. If the child makes a substitution in an event category using a sequentially and logically coherent alternative event (not listed on the scoring sheet) then credit is earned for the substituted event.

Child did not verbalize eating (snack or supper) or brushing teeth as listed in the Habit category of the scoring form, but did verbalize:

And you get some water and go use the bathroom. [Earns event credit plus elaboration credit for more than one act in the Habit category]

Form

3. Infinitive phrases do not make sentences complex unless the subject of the infinitive verb form is different from the main clause.

Sometimes my daddy tells me to wash my face with soap. [Complex]

Then I have to wash my face with soap. [Not complex]

4. If an utterance includes two event categories mentioned in the correct sequence, credit is earned in both categories; however, the utterance can only be given credit in one category for form scoring.

I take my clothes off and get in the bathtub. [Event credit for both Preliminary Event and Response categories, MLU and complete credit earned only in Preliminary Event category]

You get in your bed and read a book. [Event credit for both Bed and Habit categories, MLU and complete sentence credit for only one category]
You get in your bed and your mama reads a book to you. [Event credit for both Bed and Habit categories, MLU, complete, and complex sentence credit for only one category]

5. An utterance must include 5 words to earn credit as meeting the MLU criteria for four-year-old children. Contractions are counted as two words.
6. Understood subjects in the main clause are not included when computing utterance length or in analysis of complete sentences.
[He's] Takin his clothes off. [No MLU or complete sentence credit]
[You] Put your nightclothes on. [No MLU or complete sentence credit]
 Understood subjects used with compound verbs or in dependent clauses of complex sentences, when the main clause has a verbalized subject, can be included in analysis of complete and complex sentences.
7. If a sentence is incomplete it cannot be scored as complex.
8. The use of immature verb forms (overgeneralized rule use) cannot earn credit as complete sentences except for African American children if the verb form is defined by Craig and Washington (1994, 1995) as African American English Forms or by Shames and Wiig (1986) as Black English and for Caucasian children if the verb form is identified by Shames and Wiig (1986) as Southern White Nonstandard English.
And then he goed to brush his teeth. [Incomplete]
9. The use of the zero copula verb form by African American children earns credit toward a complete sentence. The use of the zero copula does not include the addition of an extra point toward meeting MLU criterion.
Her mama kissing her. [Complete sentence credit, no MLU credit]
She sleeping. [Complete sentence credit, no MLU credit]
He sleeping in the bed. [Complete sentence credit and MLU credit]
10. Beginning a statement with the word *Is* does not earn credit toward a complete sentence. This is not defined by Craig and Washington (1994, 1995) as characteristic of AAE or by Shames and Wiig (1986) as Black English.
Is she took a bath. [Incomplete]
Is she took off her clothes. [Incomplete]
11. Subject and verb may differ in agreement for African American children and still earn credit toward a complete sentence
She get outta the tub. [Complete for African American children]
Her mama read a story. [Complete for African American children]

12. If the child uses a possessive pronoun as a subject then credit toward a complete sentence is not earned.
Her taking a bath. [Incomplete for both AAE and SWNE]
13. If the child uses an incorrect verb form (other than those defined as AAE or SWNE) then credit toward a complete sentence is not earned.
Her mama putting her clothes off. [Incomplete for AA and SW children]
Her mama taking her clothes off. [Complete for AA children]
Her mama is taking her clothes off. [Complete for SW and AA children]
14. The word *hissself* earns credit toward a complete sentence for both AA and SW children as it is a common adult form for both AA and SW adults.
Then he dried hissself. [Complete for AA and SW children]
15. When the word *and* is used to join two phrases having the same understood subject, each phrase is counted as a separate utterance:
Take your bath and wash your hair. [Take your bath = one utterance and wash your hair = one utterance.]
16. When the word *and* joins a subject-verb phrase and an understood (to be the same as the preceding subject) subject-verb phrase then this verbalization is counted as one utterance.
You take a bath and wash your hair. [One utterance]
 However, any additional joined phrases are counted as separate utterances:
You take a bath and wash your hair and scrub your neck and wash your ears.
 [You take a bath and wash your hair = one utterance, and scrub your neck = one utterance, and wash your ears = one utterance]
17. Verb phrases joined by the word *then* or the words *and then* are counted as separate utterances whether they include a subject or an understood subject.
Then you brush your teeth. [One utterance]
And then rinse your toothbrush. [One utterance even when immediately proceeded by the above.]
And then you brush your teeth and rinse your toothbrush. [One utterance]
Then brush your teeth and rinse your toothbrush. [Two utterances as no subject is verbalized. Then brush your teeth = one utterance, then rinse your toothbrush = one utterance]
Brush your teeth and then rinse your toothbrush. [Two utterances with Brush your teeth = one utterance, and then rinse your toothbrush = one utterance]
Note: Verb phrases beginning with *then* that are preceded by a phrase beginning with *if* are counted as one utterance.
If you drink some water then you have to tee-tee. [One utterance]

18. Credit may be given in the Coda category for Tasks 1, 3, & 4 and the Outcome category for Task 6 when the child makes a verbal substitution for the act of *going to sleep* by verbalizing *waking up the next morning* as this clearly implies going to sleep.

Additional Rules for Scoring Task 2 (Picture Sequencing)

Content

19. When a photo is placed out of sequence according to the Canonical or the Parent/caretaker report, points are not earned in any other scoring area (*Elaboration, Verbal, MLU, Complete, Complex*) for that event category.
20. If the child places a photo in incorrect sequence according to the parent/caretaker report (or the event is not included in the parent/caretaker report) but places it in the correct Canonical sequence, then credit is given: Child places Photo E in correct Canonical sequence yet parent reports that child normally does not brush teeth at night. Credit given as world knowledge for the event is implied.
21. If the pictured event is clearly implied by a verbalization that is more focused on a detail of the photograph, then credit is given for presence of the event category and for verbalization.
Child verbalized as pointed to a photo of a child sleeping wearing a necklace:
He should take that bead necklace off. He could strangle [in his sleep].
Child verbalized as pointed to a photo of a child in bed with eyes closed having mouth open and lower lip protruding:
Cry and make a mean face [when made to go to sleep].
22. If the verbalization for a correctly sequenced photo contradicts verbalizations provided for other event photos, then credit can only be earned in the one category deemed most logical, with the remaining sequence of verbalizations, when one of the contradictory events is excluded.
For Photo A depicting a child undressing by the bathtub:
She got out the bathtub, put her clothes on. [No event credit given]
Then later for Photo C depicting a child drying with a towel by the bathtub:
And when she was ready to get out she got out and dried herself. [Event credit given]
23. If the parent/caretaker reports that brushing teeth is not a usual part of the normal bedtime routine and/or is a morning only routine, then credit is given for placing the brushing teeth photo as last in the sequence as if it is morning brushing.
Photo E placed last in sequence and verbalized:
She woke up in the morning. She brushin her teeth. [Event credit in Habits even though it occurs last in the sequence]

24. If the parent/caretaker reports that the child sleeps with an adult who comes to bed after the child gets in the bed, then the placement of Photo G (mother kissing child) may earn event credit if the verbalization does not imply that the mother leaves after kissing the child.

Additional Rules for Scoring Story Grammar Tasks 5-7

Content

25. To receive credit in a given category, all prior categories do not need to receive credit. After a category is given credit, events (or inferences) in subsequent categories must logically follow the events previously given credit.
26. Utterances may earn credit in categories when they occur out of sequence according to the scoring form only if logical connections to other categories are made.

Task 5

The girl was happy in the bed with her cat because she finally found it.
The girl was happy in the bed with her cat receives credit in the final category for Evaluation and because she finally found it receives credit for Outcome.

APPENDIX K
SAMPLE TRANSCRIPTS

(4) Pri1 M

Task 3

**First you give him a bath [tells puppet but doesn't enact]
Then you uh put him to bed
And read him a story
P: And
And read him a story
P: And after the story
Go to sleep
P: Anything else?
Kiss him
P: Anything else?
I love you**

Task 2

Order: A,B,C,D,F,H,G,E

**Take off your clothes
Take a bath
Dry off
Getting dressed
Reads a book
Goes to sleep
Goes to sleep again
Brushes his teeth**

Task 5

**Uh first she gets home from school
And uh she uh brush her teeth
P: Um hum
Then she does ah eat some more
Then she does ahhh
P: And what happened?
Then then she go to bed
P: And
Then she lost her cat
Then she find it she found it under the covers
P: And**

**She went to bed and with her cat
The end**

Task 7

**Uh a ghost came over and pushed him under the covers
And swung him up right up to the moon
P: And
His mama cried
Uh, the end**

Task 4

**First you eat
Then you brush your teeth
Then you take a shower or a bath
Then go to, then read a book
Then go to bed
P: Is that all?
Um hum**

Task 6

**Uh brush your teeth
And she might cover you up
P: Cover you up
Not for real, un un, I don't have no, I don't have no blanket over there
I only have a towel, a big towel, a big one
P: Oh good, so that would work well, and then what?
Uh, just go to bed
P: Okay
She would read us a story
P: Is there anything else?
[nods head no]**

Task 1

**P: What do you do first?
Take a bath [picks up soap]
P: Can you show us? Just do the things
Wash your hair
Then you soap your body
Then you dry yourself
Then, first you turn off the water before you dry yourself
Then you just ah get out and put on your boxers**

[puts pillow on rug, places towel spread out on rug then carefully spreads blanket over towel]

P: What do you do now?

What's this?

P: A nightshirt

Then you put a nightshirt on

P: Okay and

And then go to bed

P: Anything else?

[looks over props] Oh, brush your teeth [picks up toothbrush]

P: Anything else?

[nods head no]

(16) HS2 M

Task 2

Order: A,B,C,D,E,F,H,G

**Takin off her shirt
Is she took a bath
Is she took off her clothes
Go to sleep [drying off with towel photo]
Go brush her teeth
The mama read a book to her
And she went to sleep
Kissed her in bed**

Task 6

**Go to sleep
Wake up
Turn on the light
Eat your snack
P: R Anything else
[nods no]**

Task 4

**Take your bath
And get out
And put your clothes on
And then get in the bed
P: Then what?
Go to sleep**

Task 5

**The cat went away and the girl couldn't find him
P: And then what?
And she was lookin all over for the cat
P: And ... What next?
They found it
P: R And then?
Don't know
P: Tell Polly what happened next
And she found it
P: And then
And they went to sleep**

Task 1

[first puts pillow on rug]

Get in the tub [gets in]

Take ya bath

Turn the water out [pretends to turn drain lever]

Get outta the tub [gets out]

Brush your teeth [pretends to brush teeth with toothbrush]

Then eat your food [pretends to eat with bowl and spoon]

P: And then what?

Watch your tape [picks up videotape]

P: Okay, and then what... after the tape?

And go to sleep [puts tape down and puts head on pillow]

Task 3

Take a bath [rubs soap on doll]

And brush ya teeth

Then put the soap down [puts soap down then doll down]

And go to sleep [covers doll with blanket]

P: Anything else?

[nods no]

Task 7

A big storm came

P: R And then what?

Stormed 'em

P: R Then ... then

And then he woked up and he was scared

P: R Anything else?

[nods yes]

P: Hum?

And he went to sleep and took a nap

(28) Cat1 F

Task 2

Order: A,B,C,D,E,F,G,H

**He's takin off his clothes
He's takin a bath
His mama put a towel on him
He's getting dressed for bed
He's brushin his teeth
His mama's readin a bedtime story
She gives him a bedtime kiss
He's fallin asleep**

Task 5

**She brushed her teeth
P: R
And she washed her hair
P: R
And she ah she put on her nightgown
P: R And then what?
Her cat got lost and she looked for it and it was right in the bed
P: R And then what?
They fell asleep**

Task 3

**You ask your mama if you can go play outside til it's supper
P: R
She calls you out for bathtime
P: R
I sit, and I sit down in the bathtub and play
P: R
And I wash myself by myself and my mama puts soap in my hair and I
wash it out
P: R
Then we, we, I ask my daddy if he can go get my p.j.'s to put on.
Whichever one I say he gives me
P:R
It's TV time and I eat popcorn and it's a scary one
P: R and then what?
At 8 o'clock I go to bed
P: R And then what?**

If Daddy's not there I just give Mama a bedtime kiss and she gives me one back

P: R

And a hug

P: R

We make patterns

P: R Oh, and after kissing, what?

We fall asleep where it's cool and nice

Task 4

I take my clothes off and get in the bath tub

P: R

And then I bathe myself

P: R

And I ask my mama if I can get out

P: Um hum

And she tells me, "Yes baby"

P: R

And I ask my Daddy to get me my p.j.s

P: R

And underclothes

P: R Okay

It's rinse teeth time

P: R

And I go to bed at 8 o'clock

P: R Anything else?

Yeah, you kiss each other and hug each other

P: R

And you sleep in the cool night in the house

P: Okay

Task 7

Her cat got lost outside

P: R

She found it outside laying in the grass

P: R

She found him with his claws pulled out

P: R

And he was terrible cold

P: R

She asked her mama to come see if he had to go to the doctor

P: R

He did and he had to have surgery on his paw

P: R And then what?

They took him home and they gave him some cat medicine in his water

P: R

And he was terrible because he had to sleep after his medicine

P: R Um

He kept wokin up and saying, "Mommy I wanna go play. Mommy I wanna go play."

P: R And then what?

She said after you're done [well] then you can eat table food and then you can go outside and play with your cat friends.

P: R Anything else?

[nods no]

Task 1

Uh, I go outside and play

P: R

My mama runs up the bath so I can swim in the bathtub

P: R Want to show us?

[gets in tub and leans back]

P: Oh, I see

[gets up then pretends to dry] Then I dry off with a towel

P: R

I brush my teeth

I don't want to put it in for real, just for pretend [pretends to brush teeth]

P: Yeah

[picks up bowl, pretends to eat]

P: What were you doing there?

It's TV time [picks up videotape cassette]

P: R

It's bedtime to read the book [picks up book]

P: R

And then you sleep [touches pillow then blanket]

P: R

And then put the blanket on [pulls blanket up to neck]

P: R Anything else?

[nods no]

Task 6

They would have to brush their teeth

P: R

If they wanted to drink water before they went to bed then they have to tee-tee

P: R

The hurricane was coming so close to the door, but it didn't knock it down

P: R

The door almost undid but it was shaky

P: R

It didn't but it would

P: R

The honeybees protected it

P: R

Cause they were all around it

P: And then...

They have to take out their mats

P: R

Ms. __ said, "I don't care because the mats don't have names on them. I don't care if it is yours or not."

P: R Okay, and then what?

They got their blankets and pillows

P: R Anything else?

They went to bed and watched TV before bed

P: R Is there anything else Ms. __ had the children do?

She read them a bedtime story

P: R And

They went to sleep

APPENDIX L TABLE OF SCORES

#	ID	Task 1		Task 2		Task 3		Task 4		Task 5		Task 6		Task 7		Direct Literacy	Indirect Literacy	Literacy Total	Home Books Est.	TONI -2	#
		Cont	Form	Cont	Form	Cont	Form	Cont	Form	Cont	Form	Cont	Form	Cont	Form						
16		16	7	12	12	13	5	15	6	7	4	10	3	13	9	75	50	125	100	115	2
17		17	14	18	13	8	4	12	11	5	4	3	2	0	6	63	60	123	130	96	3
5	P12 F																				
6	P12 F																				
7	P12 M	14	8	14	12	13	10	16	1	7	5	12	4	11	8	50	54	104	100	102	7
8	P12 M																				
9		9	3	14	2	9	1	8	2	7	7	3	0	6	6	72	43	115	20	104	9
10		10	6	10	6	5	1	9	3	5	4	3	2	5	4	46	27	73	25	98	10
11		11	4	12	3	8	0	7	4	8	4	6	0	4	2	47	31	78	10	88	11
12		12	3	13	13	5	3	7	4	3	2	0	0	14	8	80	53	113	40	89	12
13	H82 F	13	7	14	11	6	2	13	5	6	4	4	3	0	4	82	41	93	46	92	13
14	H82 F	14	1	13	8	4	3	12	6	13	11	3	2	7	6	86	33	80	25	92	14
15	H82 M	15	7	8	8	7	2	6	6	5	4	0	0	2	1	33	27	50	10	57	15
16	H82 M	16	0	13	4	6	0	10	3	5	6	2	0	6	3	36	26	50	20	58	16
17		17	4	16	2	9	4	9	7	5	8	5	2	4	4	50	37	91	15	100	17
18		18	0	16	7	3	1	10	0	10	4	5	1	11	6	36	29	57	5	58	18
19		19	3	12	0	8	0	7	1	2	2	1	1	4	1	41	30	59	15	62	19
20		20	5	13	5	9	5	8	5	3	3	2	0	0	0	40	30	50	10	60	20
21	MEC M																				
22	MEC M																				
23	MEC F	23	1	17	8	11	3	7	1	10	7	2	1	7	4	38	34	60	6	66	23
24	MEC F	24	2	16	0	13	0	10	1	10	1	7	0	2	1	47	40	65	10	60	24
25		25	2	14	0	10	4	9	0	11	9	7	3	0	6	62	50	112	300	92	25
26																					
27		27	13	14	8	12	8	10	6	7	5	3	2	13	8	74	46	122	200	96	26
28	CE2 F	28	3	12	7	7	5	11	8	7	6	10	4	8	6	65	64	129	100	96	27
29	CE2 F																				
30	CE2 F																				
31	CE2 M																				
32	CE2 M																				

VITA

Emily Smith is currently an instructor with the Department of Curriculum and Instruction at Louisiana State University. She teaches two undergraduate elementary education courses as well as assisting in the administration of a project to promote the integration of technology in teaching and learning.

Current professional activities also include serving as an editorial consultant for the Language in School-Age Children and Adolescents section of the American Journal of Speech-Language Pathology: A Journal of Clinical Practice. Her past professional experience includes teaching pre-K and kindergarten classes and teaching elementary students identified as academically gifted. She has taught in schools having primarily low SES populations as well as schools with primarily middle SES populations. The degree of Doctor of Philosophy will be awarded to Emily Smith on December 17, 1999.


DOCTORAL EXAMINATION AND DISSERTATION REPORT

Candidate: Emily Flake Smith

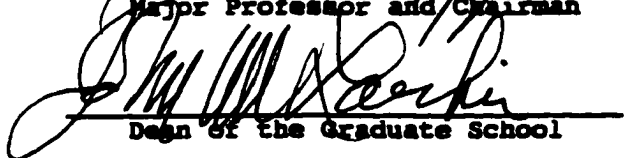
Major Field: Curriculum and Instruction

Title of Dissertation: The Performance of Prekindergarten Children on
Representational Tasks across Levels of Displacement

Approved:

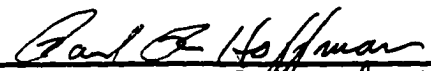


Janet Norris
Major Professor and Chairman




Dean of the Graduate School


EXAMINING COMMITTEE:



Paul E. Hoffman



Earl Clark



Mary Nell

Date of Examination:

26 October 1999